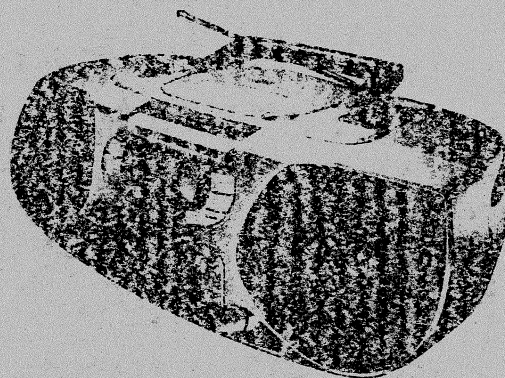


Service  
Service  
Service



# Service Manual

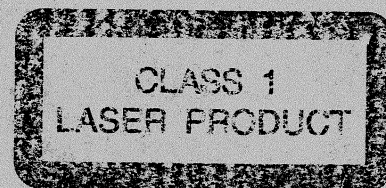
COMPACT  
disc  
DIGITAL AUDIO

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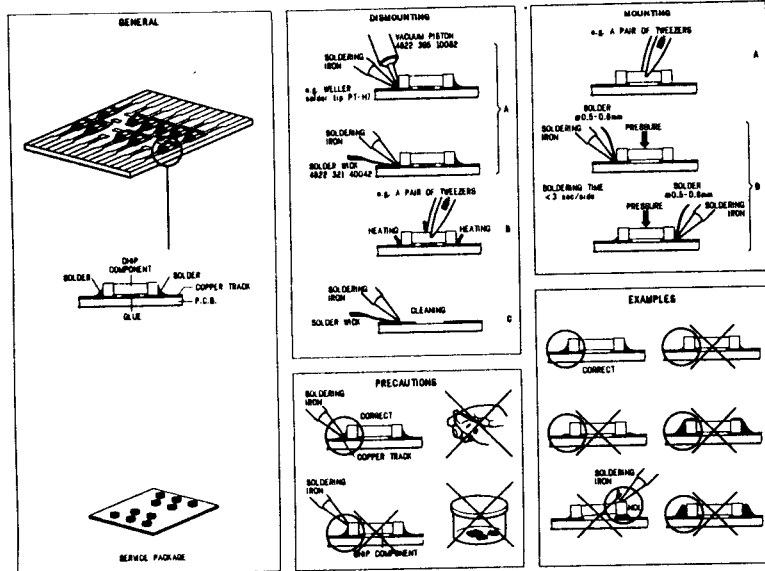
Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified be used.

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# PHILIPS

## HANDLING CHIP COMPONENTS



### GB WARNING

All ICs and many other semiconductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically. When repairing, make sure that you are connected with the same potential as the mass of the set via a wrist wrap with resistance. Keep components and tools at this potential.

### ESD



### F ATTENTION

Tous les IC et beaucoup d'autres semi-conducteurs sont sensibles aux décharges statiques (ESD). Leur longévité pourrait être considérablement écourtée par le fait qu'aucune précaution n'est prise à leur manipulation. Lors de réparations, s'assurer de bien être relié au même potentiel que la masse de l'appareil et enlever le bracelet anti-décharge de sécurité. Veiller à ce que les composants ainsi que les outils que l'on utilise soient également à ce potentiel.

### D WARNUNG

Alle ICs und viele andere Halbleiter sind empfindlich gegenüber elektrostatischen Entladungen (ESD). Unvorsichtige Behandlung im Reparaturfall kann die Lebensdauer drastisch reduzieren. Sorgen Sie dafür, daß Sie im Reparaturfall über ein Pulsschleife mit Widerstand mit dem Massepotential des Gerätes verbunden sind. Halten Sie Bauteile und Hilfsmittel ebenfalls auf diesem Potential.

### NL WAARSCHUWING

Alle IC's en vele andere halfgeleiders zijn gevoelig voor electrostatische ontladingen (ESD). Onzorgvuldig behandelen tijdens reparatie kan de levensduur drastisch doen verminderen. Zorg ervoor dat u tijdens reparatie via een pulsband met weerstand verbonden bent met hetzelfde potentiaal als de massa van het apparaat. Houd componenten en hulpmiddelen ook op ditzelfde potentiaal.

### I AVVERTIMENTO

Tutti IC e parecchi semi-conduttori sono sensibili alle scariche statiche (ESD). La loro longevità potrebbe essere fortemente ridotta in caso di non osservazione della più grande cautela alla loro manipolazione. Durante le riparazioni occorre quindi essere collegati allo stesso potenziale che quello della massa dell'apparecchio tramite un bracciale a resistenza. Assicurarsi che i componenti e anche gli utensili con quali si lavora siano anche a questo potenziale.

### GB WARNING

Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified be used.

### F ATTENTION

Les normes de sécurité exigent que l'appareil soit remis à l'état d'origine et que soient utilisées les pièces de rechange identiques à celles spécifiées.

### D WARNUNG

Bei jeder Reparatur sind die geltenden Sicherheitsvorschriften zu beachten. Der Originalzustand des Gerätes darf nicht verändert werden. Für Reparaturen sind Original-Ersatzteile zu verwenden.

### NL WAARSCHUWING

Veiligheidsbepalingen vereisen, dat het apparaat in zijn oorspronkelijke toestand wordt teruggebracht en dat onderdelen, identiek aan de gespecificeerde, worden toegepast.

### I AVVERTIMENTO

Le norme di sicurezza esigono che l'apparecchio venga rimesso nelle condizioni originali e che siano utilizzati i pezzi di ricambio identici a quelli specificati.

Anti-static table mat 1200x650x1 25mm  
Small 600x650x1 25mm

Anti-static wrist band  
Connection box (1M0hm)  
Extendible cable (to connect wrist band to conn. box)  
Connecting cable (to connect table mat to conn. box)  
Earth cable (to connect any product to mat or box)  
Complete kit ESD3 (combining all above products)  
Wristband tester

4822 466 10953  
4822 466 10958  
4822 395 10223  
4822 320 11307  
4822 320 11306  
4822 320 11308  
4822 310 10671  
4822 344 13999

### GB

Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified be used. Safety components are marked by those symbol.

### S Varning!

Oytnig laserstråling når apparaten er oppnådd og spærret er utkopplad. Betrakte øystrålen.

### DK Advarsel!

Oytnig laserstråling ved åbning når sikkerhedsforbuden er ude af funktion. Undgå udsættelse for stråling.

### SF Varoitus!

Avustus laitteissa ja suojalukituksen ohittamisessa ulostettuna näkyvämättömä laserisäteilyä. Älä katso silmiesi!

### GB

After servicing and before returning the set to customer perform a leakage current measurement test from all exposed metal parts to earth ground, to assure no shock hazard exists. The leakage current must not exceed 0.5mA.

### F

\*Pour votre sécurité, ces documents doivent être utilisés par des spécialistes agréés, seuls habilités à réparer votre appareil en panne.

## SPECIFICATIONS

### GENERAL

Mains voltage	-/00/14 : 230 V -/01 : 120 / 230 V -/17 : 120 V
Mains frequency	-/00/14 : 50 Hz -/01 : 50 / 60 Hz -/17 : 60 Hz
Battery	mains : 9 V (R20 x 6) Remote : 3 V (R6 x 2)
Power consumption	: 11 W
Dimension (W x H x D)	: 435 x 270 x 170 mm
Weight	: 3.4 Kg

### AMPLIFIER

Output power	mains : 2 x 1.6 W battery : 2 x 2 W
Speaker impedance	: 2 x 4 ohm
Frequency response	: 100 Hz - 10 kHz (±3dB)

### TUNER - FM SECTION

Tuning range	: 87.5 - 108 MHz
IF frequency	: 10.7 MHz ± 0.03 MHz
Sensitivity	: 22 dBf at 26dB S/N
Selectivity	: 20 dB at 300kHz
IF rejection	: 50 dB
Image rejection	: 20 dB

### TUNER - AM SECTION

Tuning range	MW : 522 - 1607 kHz -/17 : 520 - 1730 kHz
Sensitivity	MW : 4000 µV/m at 26dB S/N
Selectivity	MW : 16 dB
IF rejection	MW : 24 dB
Image rejection	MW : 28 dB

### AUDIO CASSETTE RECORDER

Number of tracks	: 1 stereo
Tape speed	: 4.76 cm/sec ± 3%
Wow & flutter	: < 0.48 JIS UWTD
Fast wind/rewind C60	: < 120 sec.
Frequency response	P/B : 125 - 8000 Hz
S/N ratio	: ≥ 40 dB

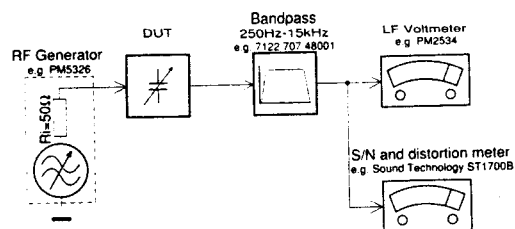
### COMPACT DISC

Frequency response	: 100 Hz - 10 kHz
S/N ratio	: > 50 dB
Channel difference	1 kHz : < 3 dB
Channel crosstalk	1 kHz : 26 dB
Laser wavelength	: 780 ± 20 nm
Laser light power	: < 0.5 mW

## SERVICE TOOLS

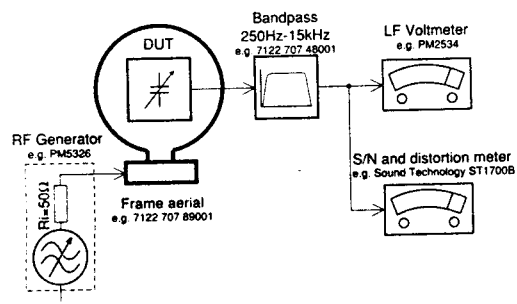
TORX T10 screwdriver with shaftlength 150mm.....	4822 395 50423
TORX screwdriver set SBC 163.....	4822 295 50145
Audio signal disc SBC 429.....	4822 397 30184
Playability test disc SBC 444.....	4822 397 30245
Test disc 5 (disc without errors) + Test disc 5A (disc with dropout errors, black spots and fingerprints) SBC 426/426A.....	4822 397 30096
Burn in test disc (65 min. 1kHz signal at -30 dB level without "pause").....	4822 397 30155
Universal test cassette Fe SBC 420.....	4822 397 30071

## Tuner FM



Use a bandpass filter to eliminate hum (50Hz, 100Hz) and disturbance from the pilotone (19kHz, 38kHz).

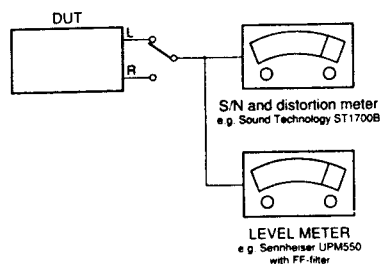
## Tuner AM (MW, LW)



To avoid atmospheric interference all AM-measurements have to be carried out in a Faraday's cage. Use a bandpass filter (or at least a high pass filter with 250Hz) to eliminate hum (50Hz, 100Hz).

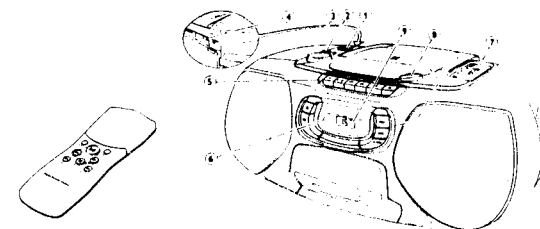
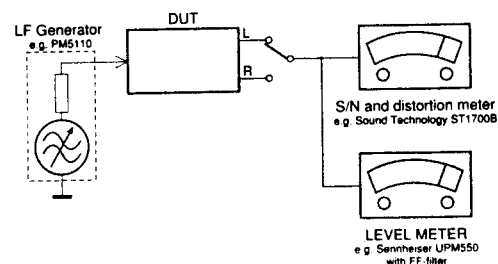
## CD

Use Audio Signal Disc SBC429 4822 397 30184 (replaces test disc 3)



## RECORDER

Use Universal Test Cassette Fe SBC420 4822 397 30071



## BASIC FUNCTIONS

- ① POWER: CD, TAPE, BAND... selects the sound source
- ② DBB... enhances the bass
- ③ VOLUME... adjusts the volume level
- ④ 3.5mm headphone socket (back of the set)

Note: Connecting the headphones will switch off the speakers.

## ⑤ CASSETTE RECORDER

- PAUSE... interrupts recording or playback
- STOP-OPEN... stops the tape and opens the cassette compartment
- SEARCH... rewinds the tape
- SEARCH... fast forwards the tape
- PLAY... starts playback
- RECORD... starts recording

- ⑥ Sensor for the infrared remote control

## RADIO

- ⑦ TUNING... tunes to radio stations
- ⑧ BAND: FM, MW... selects the wave band

## ⑧ CD PLAYER

- △ OPEN... opens the CD compartment
- ... stops CD play and erases the program
- ▶... starts and interrupts CD play
- ▶▶... skips and searches forward
- ◀◀... skips and searches backward
- CD MODE... selects the different CD playing modes and programs tracks

- ⑨ Display

## REMOTE CONTROL

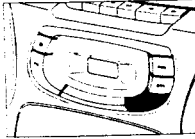
- SHUFFLE... plays CD tracks in random order
- REPEAT... repeats a track, the entire CD or the program
- ▶▶... starts and interrupts CD play
- ◀◀... selects the beginning of the current, a previous or a subsequent track of a CD
- STOP... stops CD play and erases the program
- ◀▶ SEARCH... searches backward/forward in a CD track

**CD MODE: Programming track numbers**

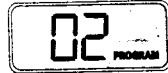
You can select a number of tracks and store these in the memory in the desired sequence. You can store any track more than once. A maximum of 20 tracks can be stored in the memory.

- 1 When CD play is stopped, select the desired track with  $\blacktriangleleft$  or  $\blacktriangleright$ .
- 2 As soon as the number of the desired track is displayed, press CD MODE to store the track in the memory.  
→ PROGRAM appears on the display. P lights up briefly, then the number of the stored track is shown.
- 3 Select and store all desired tracks in this way.
- 4 You can review your settings by pressing and holding CD MODE for more than 1 second.  
→ The display shows all stored track numbers in sequence.

If you try to store more than 20 tracks, the display shows F.

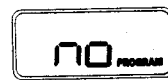
**Playing the program**

Press  $\blacktriangleright$  to play the program.

**Erasing the program**

From the stop position, press  $\square$ .

- $\square$  lights up briefly, PROGRAM disappears and your program is erased.

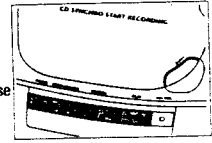


**Note:** The program will also be erased if you:

- interrupt the power supply,
- open the CD compartment, or
- move the POWER slider.

**Playing a cassette**

- 1 Set the POWER slider to TAPE.
- 2 Press STOP-OPEN  $\square$   $\blacktriangle$  to open the cassette compartment.
- 3 Insert a recorded cassette with the open side upwards and close the cassette compartment.
- 4 Press PLAY  $\blacktriangleleft$  to start playback.
- 5 Press  $\blacktriangleleft$  or  $\blacktriangleright$  to rewind or fast forward the tape.
- 6 To stop the tape press STOP-OPEN  $\square$   $\blacktriangle$ .



**Note:** The keys are released at the end of the tape.

**General information on recording**

Recording is permissible insofar as copyright or other rights of third parties are not infringed upon.

For recording on this set you should use a cassette of the type NORMAL (IEC type I). This deck is not suitable for recording on cassettes of the type CHROME (IEC type II) or METAL (IEC type IV).

The recording level is set automatically. The controls VOLUME and DBB do not affect the recording.

At the very beginning and end of the tape, no recording will take place in the 7 seconds during which the leader tape passes the recorder heads.

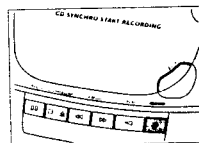
**Protecting tapes from accidental erasure**

Keep the cassette side to be protected in front of you and snap off the left tab. Now, recording on this side is no longer possible.

To record again on this side of the cassette, cover the opening with a piece of adhesive tape.

**Recording from the CD player – CD synchro start**

- 1 Set the POWER slider to CD.
- 2 Insert a CD and, if desired, program the track numbers.
- 3 Press STOP-OPEN  $\square$   $\blacktriangle$  to open the cassette compartment.
- 4 Insert a blank, unprotected, cassette and close the cassette compartment.
- 5 Press RECORD  $\bigcirc$  to start recording.  
→ Playing of the CD or program starts automatically.
- 6 For brief interruptions press PAUSE  $\parallel$ . Press the PAUSE  $\parallel$  key again to resume recording.
- 7 To stop recording, press STOP-OPEN  $\square$   $\blacktriangle$ .



**Note:** the recording can be started from different positions:

- if the CD player is in pause mode, recording will start from this very position (use  $\blacktriangleleft$  or  $\blacktriangleright$ );
- if the CD player is in stop mode, recording will start from the beginning of the CD or program.

**Recording from the radio**

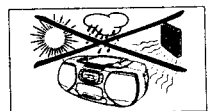
- 1 Tune to the desired radio station (see "RADIO").
- 2 Press STOP-OPEN  $\square$   $\blacktriangle$  to open the cassette compartment.
- 3 Insert a blank, unprotected, cassette and close the cassette compartment.
- 4 Press RECORD  $\bigcirc$  to start recording.
- 5 For brief interruptions press PAUSE  $\parallel$ . To resume recording press the PAUSE  $\parallel$  key again.
- 6 To stop recording, press STOP-OPEN  $\square$   $\blacktriangle$ .

**General maintenance**

Do not expose the set, batteries, CDs, or tapes to humidity, rain, sand, or excessive heat (caused by heating equipment or direct sunlight).

The mechanical parts of the set contain self-lubricating bearings and must not be oiled or lubricated!

You can clean the set with a soft, slightly dampened, lint-free cloth. Do not use any cleaning agents as they may have a corrosive effect.

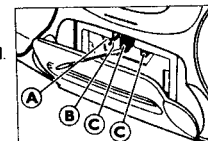
**Tape deck maintenance**

To ensure proper recording and playback quality, clean parts (A), (B), and (C) after approximately 50 hours of operation. Use a cotton swab slightly moistened with alcohol or head-cleaner fluid.

Press PLAY  $\blacktriangleleft$  and clean the rubber pressure roller (A).

Press PAUSE  $\parallel$  and clean the capstan (B) and the heads (C).

**Note:** Cleaning of the heads (C) can also be done by playing a cleaning tape once.

**CD player and CD handling**

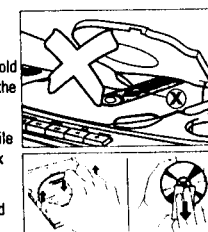
The lens (X) of the CD player should never be touched. Always keep the CD compartment closed to avoid dust on the lens.

The lens may cloud over when the set is suddenly moved from cold to warm surroundings. Playing a CD is not possible then. Leave the CD player in a warm environment until the moisture evaporates.

To take the CD out of its box easily, press the centre spindle while lifting the CD. Always pick up the CD by the edge and put it back in its box after use.

To clean the CD, wipe it in a straight line from the center toward the edge using a soft, lint-free cloth. A cleaning agent may damage the disc!

Never write on a CD or attach a sticker to it.

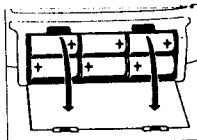




### Batteries

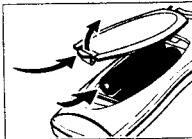
#### For the set (optional)

Open the battery compartment of the set and insert 6 batteries, type **R20**, **UM-1** or **D**-cells (preferably alkaline).



#### For the remote control (supplied)

Open the battery compartment of the remote control and insert 2 batteries, type **R03**, **UM-4** or **AAA**-cells (preferably alkaline).

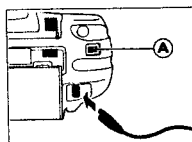


Remove batteries if they are flat or if the set is not going to be used for a long time.

**Batteries contain chemical substances, so they should be disposed of properly.**

### Mains

1 Check whether the mains voltage as shown on the type plate corresponds to your local mains voltage. If it does not, consult your dealer or service organisation. **The type plate is located on the bottom of the set.**



2 If the set is equipped with a VOLTAGE selector (A), set this selector to the local mains voltage.

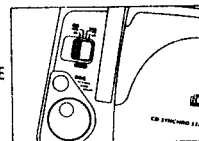
3 Connect the mains cable to the AC MAINS socket and the wall socket. This switches on the mains supply. **The mains cable is inside the battery compartment.**

The battery supply will be switched off when the set is connected to the mains. To change over to battery supply, pull out the plug from the unit's AC MAINS socket.

To disconnect the set from the mains completely, remove the mains plug from the wall socket.

### Switching the set on and off

Set the POWER slider to the desired sound source: CD, TAPE, or BAND (for radio).

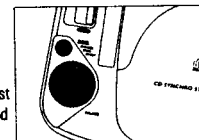


The set is switched off when the POWER slider is set to OFF/TAPE and the keys of the tape deck are released.

**Note:** If you use batteries, switch the set off after use. This will avoid unnecessary power consumption.

### Adjusting volume and sound

Adjust the volume using the VOLUME control.

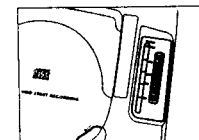


Increase and decrease the bass level by pressing DBB.

The bass level can also be emphasised if you place the set against wall or shelf. Do not cover any vents; leave sufficient room around the unit for ventilation.

### Radio - tuning to radio stations

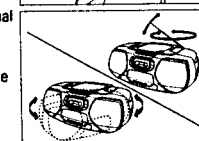
1 Set the POWER slider to FM or MW to select the desired wave band.



2 Tune to the desired radio station by using the TUNING wheel.

#### Improving RADIO reception

For **FM** stations, pull out the telescopic antenna. To improve the signal, incline and turn the antenna. Reduce its length if the signal is too strong (very close to a transmitter).

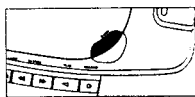


For **MW** stations, direct the built-in antenna by turning the whole set. The telescopic antenna is not needed.

### Playing a CD

1 Set the POWER slider to CD.

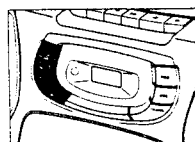
2 Press  $\Delta$  OPEN to open the CD compartment.



3 Insert an audio CD (printed side up) and close the CD compartment.  
→ The CD player starts and scans the contents list of the CD. Then, the CD player stops. Display indication: the total number of tracks.



4 Press the  $\triangleright \parallel$  button to start CD play.  
→ Display indication: the current track number.



5 Press the  $\square$  button to stop CD play.  
→ Display indication: the total number of tracks.

You can interrupt CD play by pressing  $\triangleright \parallel$ . Continue CD play by pressing the button again.

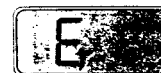
→ Display indication: the current track number (flashing).



**Note:** CD play will also stop if:

- you open the CD compartment,
- the end of the CD is reached, or
- you move the POWER slider.

If you make a mistake when operating the CD player, or if the CD player cannot read the CD, the display shows **E** or **no**. (See "TROUBLESHOOTING".)



If you press  $\triangleright \parallel$  and there is no CD inserted, the display shows **no**.



### Search backward $\ll$ and forward $\gg$

#### Selecting another track

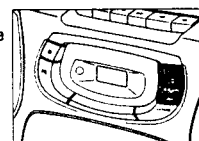
Briefly press the  $\ll$  or  $\gg$  button once/several times to skip to the beginning of the current, previous or subsequent track(s).

**During CD play:**

CD play continues automatically with the selected track.

**When CD play is stopped:**

Press  $\triangleright \parallel$  to start CD play.  
→ Display indication: the selected track number.



#### Searching for a passage during CD play

1 Hold down the  $\ll$  or  $\gg$  button to find a particular passage in a forward or backward direction.  
→ CD play continues at a low volume.

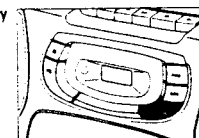
2 Release the button when you have reached the desired passage.

**Note:** In the different CD modes or when playing a program, searching is only possible within the particular track.

### CD MODE: Shuffle and Repeat

1 During CD play press CD MODE repeatedly to cause the display to show the different playing modes.

- **SHUFFLE:** All tracks of the CD (or program) are played in random order.
- **SHUFFLE REPEAT ALL:** All tracks of the CD (or program) are played repeatedly in random order.
- **REPEAT:** The current track is played repeatedly.
- **REPEAT ALL:** The entire CD (or program) is played repeatedly.



2 After 2 seconds of flashing display indication, CD play starts in the chosen mode.

3 To return to normal CD play, press CD MODE until the display indication disappears.



**WARNING**

*Under no circumstance should you try to repair the set yourself as this will invalidate the guarantee.*

If a fault occurs, first check the points listed below before taking the set for repair.

If you are unable to solve a problem by following these hints, consult your dealer or service center.

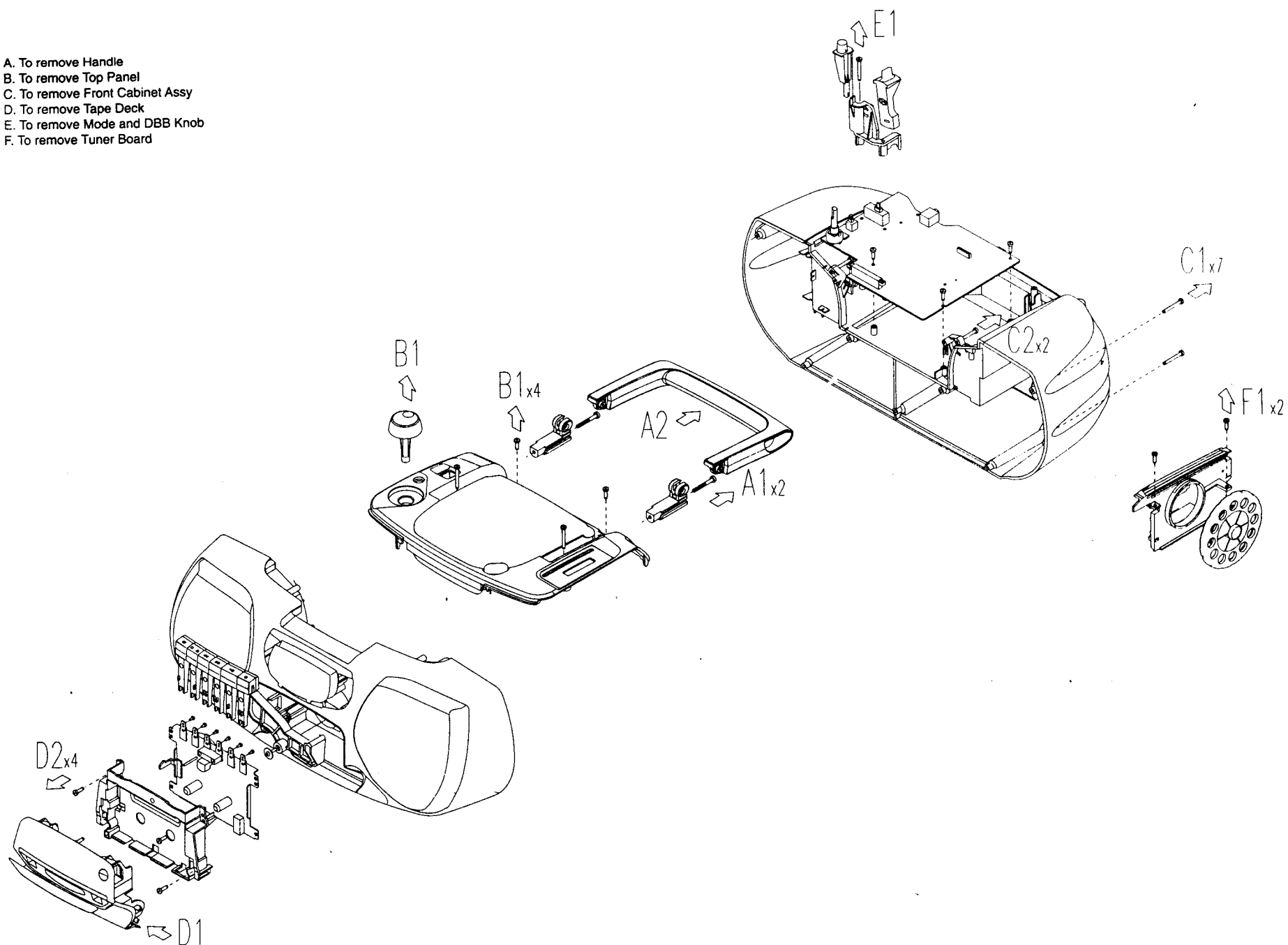
Problem	Possible cause	Solution
<b>No sound, no power</b>	VOLUME is not adjusted.	Adjust volume.
	Headphones are connected.	Disconnect headphones.
	Mains cable is not securely connected.	Connect mains cable properly.
	Batteries are flat.	Insert fresh batteries.
	Batteries are inserted incorrectly.	Insert batteries correctly.
	Trying to change over from mains to battery supply without removing the plug.	Remove the mains plug from the unit's AC MAINS socket.
	Electrostatic discharge.	Disconnect the set from power supply, reconnect after a few seconds.
<b>No reaction to operation of any keys</b>	Weak radio signal.	Direct the antenna for optimum reception.
<b>no or E indication</b>	Interference caused by electrical equipment like TVs, computers, engines, etc.	Keep the radio away from electrical equipment.
	The CD is badly scratched or dirty.	Replace or clean the CD.
	No CD is inserted.	Insert a CD.
	The CD is inserted upside down.	Insert CD with label facing up.
	The laser lens is steamed up.	Wait until the lens has cleared.
<b>The CD skips tracks</b>	The CD is damaged or dirty.	Replace or clean the CD.
	<b>SHUFFLE</b> or <b>PROGRAM</b> is active.	Switch off <b>SHUFFLE</b> or <b>PROGRAM</b> .
<b>Poor cassette sound quality</b>	Dust and dirt on the heads, capstans or pressure rollers.	Clean heads, capstans, and pressure rollers.
	Use of unsuitable cassette types (METAL or CHROME) for recording.	Only use <b>NORMAL</b> type cassettes for recording.
	Cassette tab(s) may be snapped off.	Apply a piece of adhesive tape over the opening.
<b>Recording does not work</b>	Batteries are inserted incorrectly.	Insert batteries correctly.
<b>Remote control does not function properly</b>	Batteries are flat.	Insert fresh batteries.
	Distance to the set is too large.	Reduce distance.

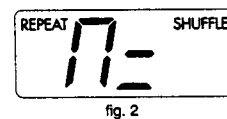
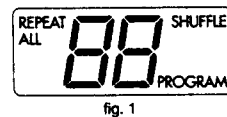
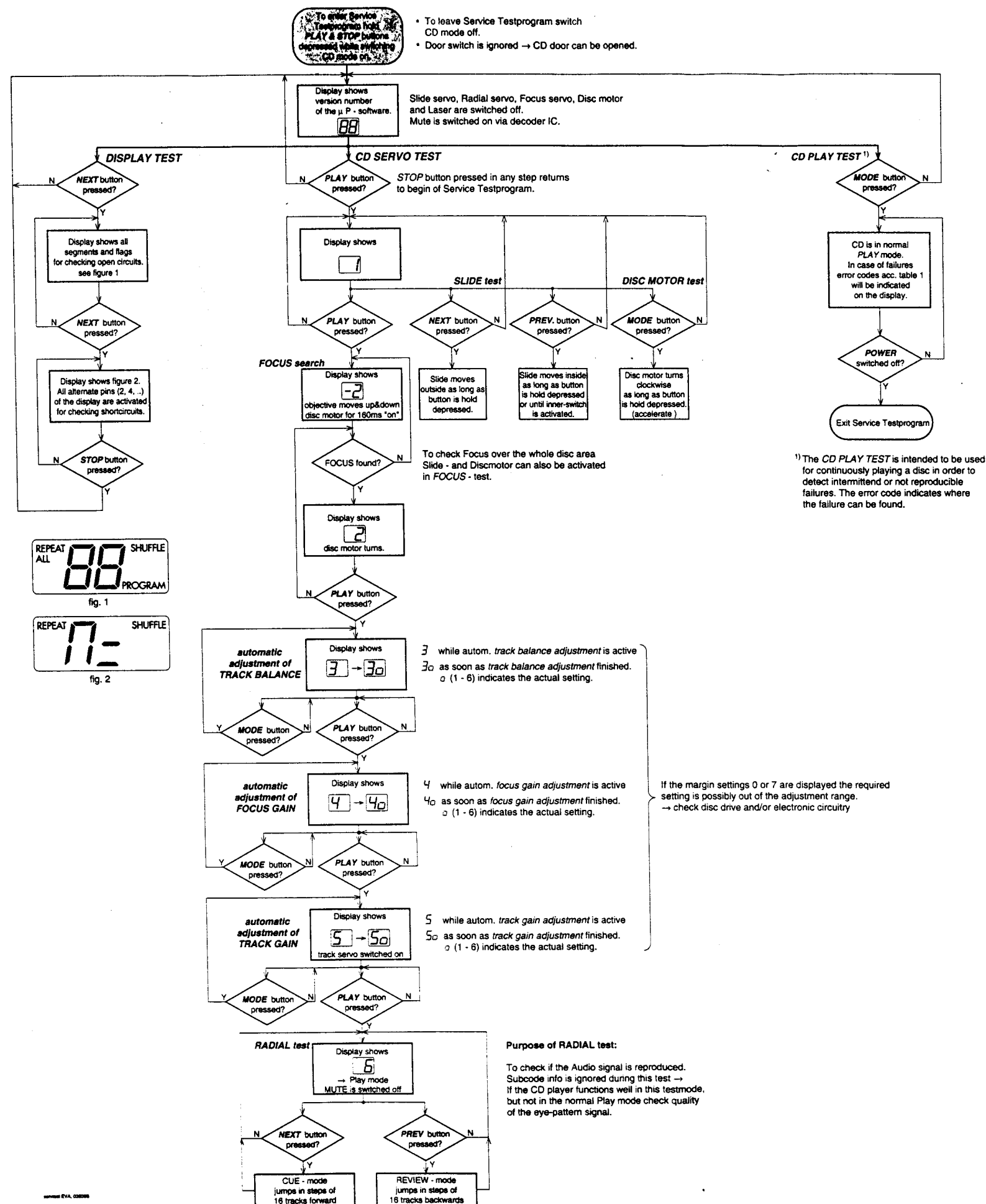
# DISASSEMBLY DIAGRAM

4-1

4-1

- A. To remove Handle
- B. To remove Top Panel
- C. To remove Front Cabinet Assy
- D. To remove Tape Deck
- E. To remove Mode and DBB Knob
- F. To remove Tuner Board





CD ERROR codes

Error number	Error description	Error type
E0	<b>Focus Error</b> Triggered when the focus is lost for more than 250ms during playing the CD.	W
E2	<b>Slide-In error</b> Generated when the inner-switch did not close within approx. 4s when the pick up is moved inside. Inner-switch or slide motor problems.	W
E3	<b>Slide-out error</b> Generated when the inner-switch did not open within approx. 250ms when the pick up is moved from the inner position outside. Inner-switch or slide motor problems.	W
E5	<b>Jump error.</b> Triggered when the servo processor counts too less tracks in a defined time during JUMPS. This can be caused by a disturbed HF-signal (the tracks cannot be recognized exactly), slide motor problems, track servo problems or scratched discs.	W
E6	<b>Subcode Error</b> No valid subcode for 300ms during PLAY.	W
E7	<b>PLL lock error</b> When the PLL did not lock after 10 retries then this warning message is generated and the servo is stopped and restarted (as if the user would have pressed STOP and then PLAY immediately) to recover.	W
F0	<b>Focus Search Error</b> Triggered when the focus could not be found within 3s when starting up the CD.	F
F2	<b>Fatal Subcode Error</b> No valid subcode for more than 4s during PLAY.	F

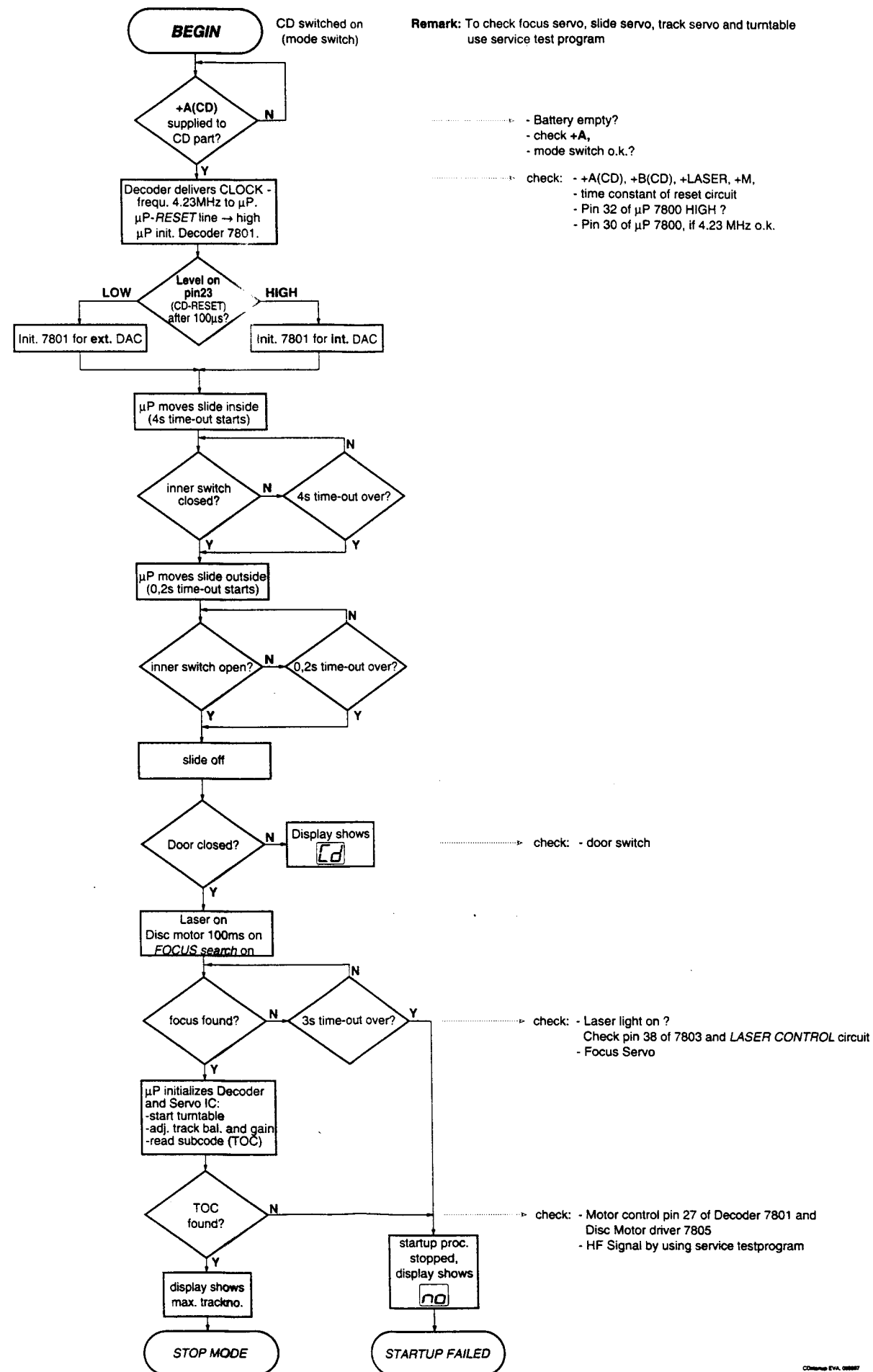
table 1

Error type: W = Warning → set continues operation, message remains on the display until next error occurs or any key is pressed.

F = Fatal Error → set stops operation, message remains on the display.  
(The set can only be operated again via a reset)



## CD STARTUP PROCEDURE



## Abbreviations and Pin-descriptions of CD ICs

## SERVO PROCESSOR M62475FP

Pin	Name	Direction
1-3	A, B, C	Diode array → Servo processor
4-5	E, F	Diode array → Servo processor
6	SGT	Servo processor → Track error ampl. Input
7	TE -	-
8	TEGain	-
9	TG1	-
10	TE out	-
11	TC/Shock	-
12	TS +	-
13	TG2	not connected
14	TS -	-
15	TS out	Servo processor → Servo driver
16	SS +	-
17	SS -	-
18	Slide out	Servo processor → Motor driver
19	DET. FILTER	-
20	BIAS	Servo processor → external electronic
21	GND	-
22	MLA/DIS	μP → Servo processor
23	JP1/SG	μP → Servo processor
24	MCK	μP → Servo processor
25	MSD	μP → Servo processor
26	D <sub>OUT</sub>	Servo processor → μP
27	C <sub>LPF</sub>	-
28	I <sub>REF</sub>	-
29	V <sub>CC</sub>	-
30	FS <sub>OUT</sub>	Servo processor → Servo driver
31	FS -	-
32	FEGain	-
33	FE -	-
34	SGF	Servo processor → Focus error ampl. Input
35	C <sub>FSR</sub>	-
36	ALPC +	-
37	ALPC -	-
38	ALPC <sub>OUT</sub>	Servo processor → Laser driver
39	MRC	-
40	HF	Servo processor → Decoder
41	HFI	-
42	ABC	-

## Description

Current input (central photo diode signal input)  
 Current input (satellite photo diode signal input)  
 Signal generator output to track servo, sends 1700Hz for adjustment procedure  
 Inverting input of track error amplifier  
 Gain control pin of track error amplifier  
 Track Gain 1 - switch: controls the gain of the track servo amplifier  
 Track Error amplifier output  
 Track Cross/Shock detector input  
 Non inverting input of track servo amplifier  
 Track Gain 2 - switch: controls the gain of the track servo amplifier  
 Inverting input of slide servo amplifier  
 Output of track servo amplifier  
 Non inverting input of slide servo amplifier  
 Inverting input of slide servo amplifier  
 Output of slide servo amplifier  
 Pin for connection of DETECTION FILTER capacitor of ADJUST LOGIC  
 Reference Voltage output V<sub>cc</sub>/2 of internal BIAS-generator  
 Ground connection pin (negative supply)  
 Serial interface Microprocessor Latch control/DIScharge control for adjustment  
 Serial interface Jump control line/Signal Generator input line for adjustment  
 Serial interface Clock input line  
 Serial interface Data input line  
 Serial interface Data output line  
 Pin for connection of Low Pass Filter capacitor of ADJUST LOGIC  
 Reference current input  
 Positive supply connection pin (4V - 5.5V)  
 Output of focus servo amplifier  
 Inverting input of focus servo amplifier  
 Gain control pin of focus error amplifier  
 Inverting input of focus error amplifier  
 Signal generator output to focus servo, sends 1300Hz for adjustment procedure  
 Charge capacitor for Focus Search triangle-generator  
 Non inverting input of Automatic Laser Power amplifier  
 Inverting input of Automatic Laser Power Control amplifier  
 Output of Automatic Laser Power Control amplifier  
 Connection pin for capacitor of Mirror detector  
 Output of HF amplifier  
 Inverting input of HF amplifier  
 Sum output of amplified A, B and C input (central photo diode signal input) to external ac-coupling capacitor

## SERVO PROCESSOR M65824FP

Pin	Name	Direction
1	Anal. V <sub>SS</sub>	-
2	ADJCLK	not connected
3	LOCK	not connected
4	CKSEL	-
5	RESET	μP → Signal processor
6	C423	Signal processor → μP
7	C846	not connected
8	XI	X-Tal → Signal processor
9	DVSS	-
10	XO	Signal processor → X-Tal
11	TEST	-
12	SBCO	not connected
13	SCCK	-
14	SYCLK	not connected
15	EFFK	not connected
16	KILLB	not connected
17	EST1	not connected
18	EST2	not connected
19	HF	Servo processor → Signal processor
20	TLC	-
21	LPF	-
22	Dig. V <sub>DD</sub>	-
23	DSPS	-
24	SBOQS	not connected
25	CRCF	not connected
26	SCAND	not connected
27	PWM	Signal processor → Motor driver
28	DVDD2	-
29	DVSS2	-
30	MCK	μP → Signal processor
31	MSD	μP ↔ Signal processor
32	MLAB	μP → Signal processor
33	EXP1	→ Signal processor
34	EXP2	→ Signal processor
35	CGREF	→ Signal processor
36	AMPREF	not connected
37	LOUT/DO	Signal processor →
38	LNEG	not connected
39	ROUT/DSCK	Signal processor →
40	RNEG/LRCK	Signal processor →
41	IREF	-
42	Anal. V <sub>DD</sub>	-

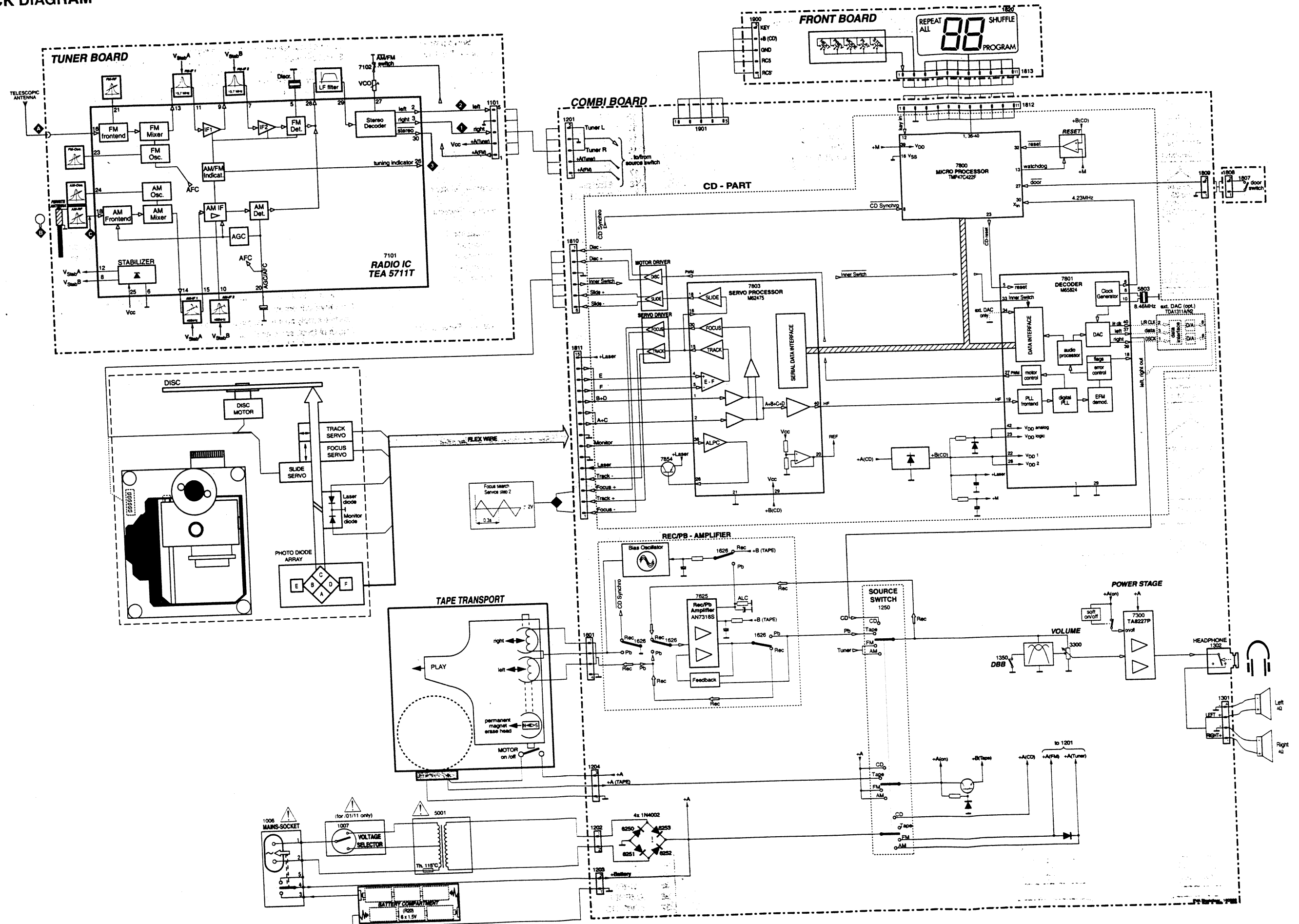
## Description

Analog system ground  
 Clock output for servo adjustment; f=88.2kHz  
 Lock monitor / low disc rotation output  
 System clock selection. Low=8.4672MHz, high=16.9344MHz  
 System reset (low level = active)  
 4.2336MHz clock output  
 8.4672MHz clock output  
 Crystal oscillator input  
 Digital system ground  
 Crystal oscillator output  
 Normal / Test selection input. Testmode = high  
 Subcode serial output  
 Shift clock input for subcode data read  
 Frame lock status output. Lock = high  
 EFM frame clock output. Duty = 50%  
 Digital silence mute output. Digital zero = low  
 Error monitor output 1  
 Error monitor output 2  
 HF signal input  
 Slice level control signal output  
 PLL loop filter  
 Digital interface power supply  
 Digital system power supply  
 Interrupt signal to read out subcode Q data. Read = low  
 Subcode Q-channel Cyclic Redundance Check Flag output. CRC o.k. = high level  
 Subcode sync signal detection. Sync = high  
 Disc motor driving (Pulse Width Modulation) output  
 Digital interface power supply 2  
 Digital system ground 2  
 μP interface shift Clock input  
 μP interface Serial Data I/O line  
 μP interface Latch clock input (internal 22k pull up resistor)  
 Versatile input pin (internal 4.7k pull up resistor)  
 Versatile input pin (internal 4.7k pull up resistor)  
 Charge-pump for LPF reference current input  
 Op-amp for LPF reference voltage setting  
 Audio signal output (left channel) / Ext. DAC mode: Audio serial data output  
 Charge pump output (left channel) / Ext. DAC mode: Wordclock output  
 Audio signal output (right channel) / Ext. DAC mode: Data shift clock output  
 Charge pump output (right channel) / Ext. DAC mode: L/R clock output  
 Current reference  
 Analog system power supply

# BLOCK DIAGRAM

5-1

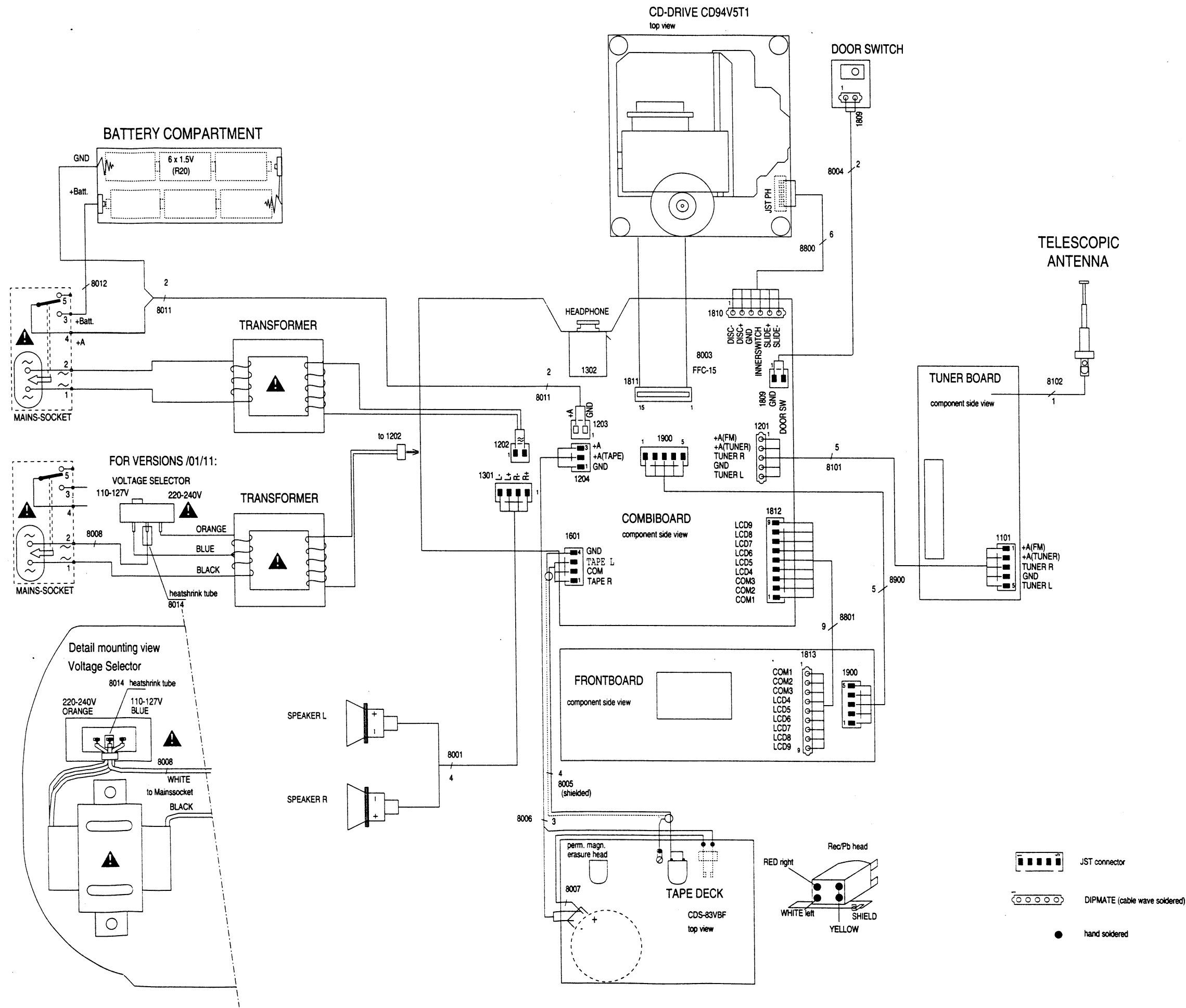
5-1

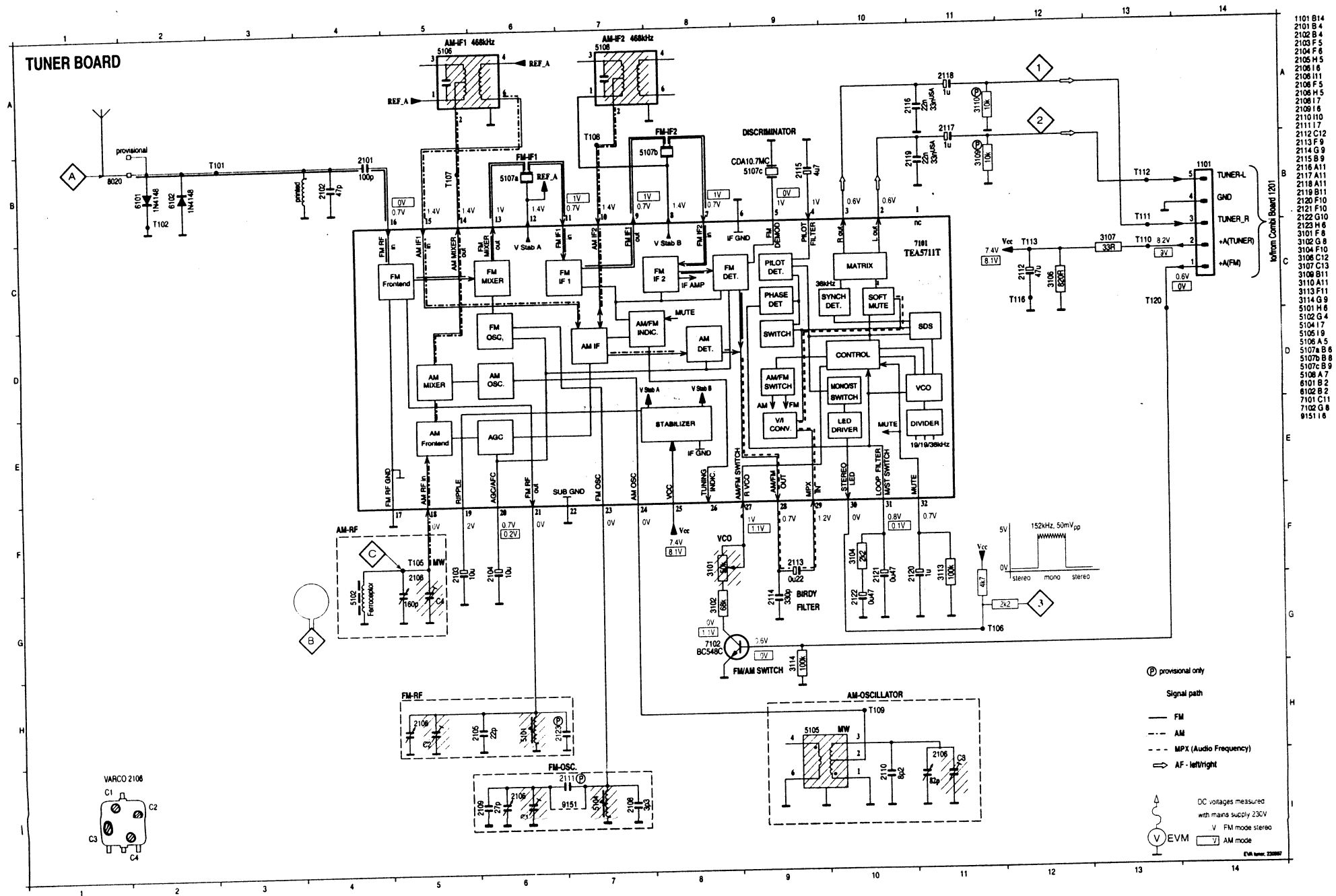


WIRING DIAGRAM

5-2

5-2

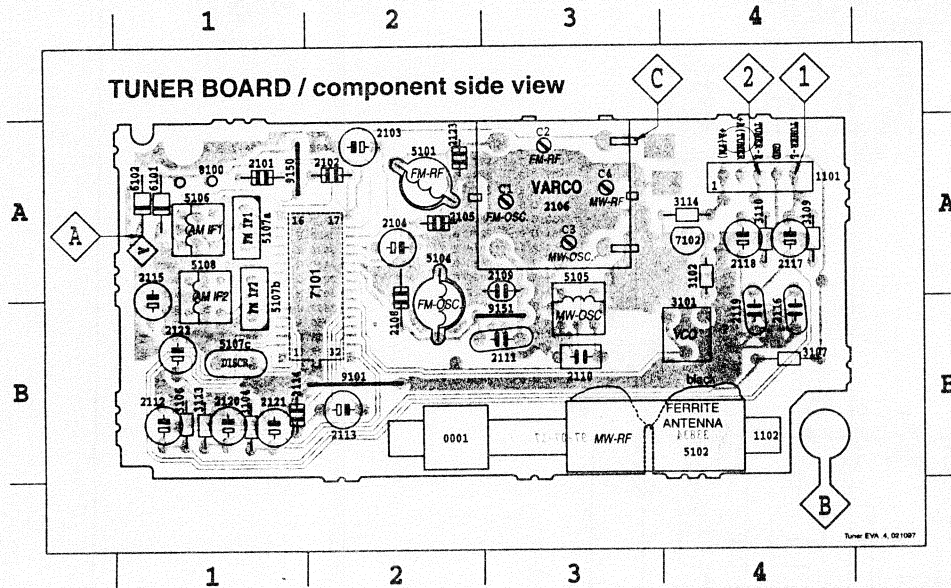




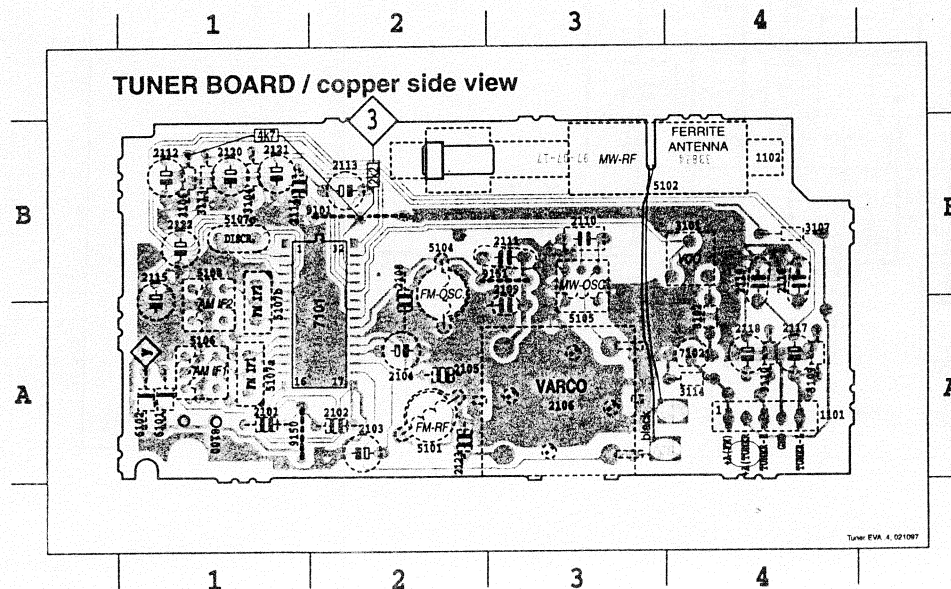


0001 B 2	2104 A 2	2111 B 3	2117 A 4	2123 A 2	3109 A 4	5104 B 2	5108 A 1	9101 B 2
1101 A 4	2105 A 2	2112 B 1	2118 A 4	3101 B 4	3110 A 4	5105 B 3	6101 A 1	9150 A 1
1102 B 4	2106 A 3	2113 B 2	2119 B 4	3102 A 4	3113 B 1	5106 A 1	6102 A 1	9151 B 3
2101 A 1	2108 A 2	2114 B 1	2120 B 1	3104 B 1	3114 A 4	5107a A 1	7101 A 2	
2102 A 2	2109 A 3	2115 A 1	2121 B 1	3106 B 1	5101 A 2	5107b A 1	7102 A 4	
2103 A 2	2110 B 3	2116 B 4	2122 B 1	3107 B 4	5102 B 4	5107c B 1	8100 A 1	





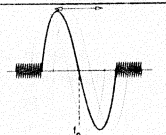





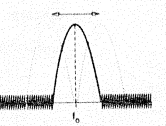







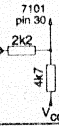

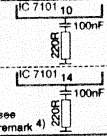


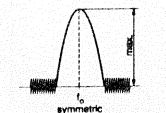



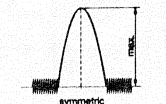
**TUNER BOARD / component side view**



**TUNER BOARD / copper side view**



### TUNER ADJUSTMENT TABLE

Waverange	Input Frequency	Input	Set tuned to	Adjust	Measure on	Scope / Counter
OSCILLATOR						
FM <sup>1)</sup> 87,5 - 108 MHz	87,35 MHz	 $\Delta f = \pm 500\text{kHz}$ $V_{RF} = 100\mu\text{V}$	lower band end 	5104	 or 	
	108,25 MHz		upper band end 	2106 C1		
MW 525 - 1607 kHz (530 - 1710 kHz) <sup>2)</sup>	512 kHz (525 kHz)	 $\Delta f = \pm 30\text{kHz}$ $V_{RF} = 100\mu\text{V}$	lower band end 	5105	 or 	
	1635 kHz (1720 kHz)		upper band end 	2106 C3		
FM - RF						
FM 87,5 - 108 MHz	87,5 MHz	 $\Delta f = \pm 500\text{kHz}$ $V_{RF} = 10\mu\text{V}$	87,5 MHz	5101	 or 	
	108 MHz		108 MHz	2106 C2		
VCO						
FM	98 MHz	 continuous wave $V_{RF} = 1\text{ mV}$	98 MHz	3101	 	152 $\pm$ 1 kHz <sup>3)</sup>
AM - IF						
MW	468 kHz connect pin 24 of IC 7101 (AM Osc) with short wire to ground	 $\Delta f = \pm 15\text{kHz}$ $V_{RF} = 10\text{mV}$	 see remark 4)	5106	 or 	
				5108		
AM - RF						
MW	560 kHz	 $\Delta f = \pm 30\text{kHz}$ $V_{RF}$ as low as possible	560 kHz	5102 (ferroceptor coil)	 or 	
	1500 kHz		1500 kHz	2106 C4		

repeat

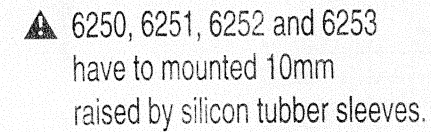
<sup>1)</sup> Check if capacitor 2109 stands upright before starting adjustments.

2) for USA /17

<sup>3)</sup> If sensitivity of frequency counter is too low adjust to max. channel separation (input signal: stereo left 90° + 9°, adjust output on right channel to minimum).

<sup>4)</sup> RC-network serves for damping the IF-filter while adjusting the other one.

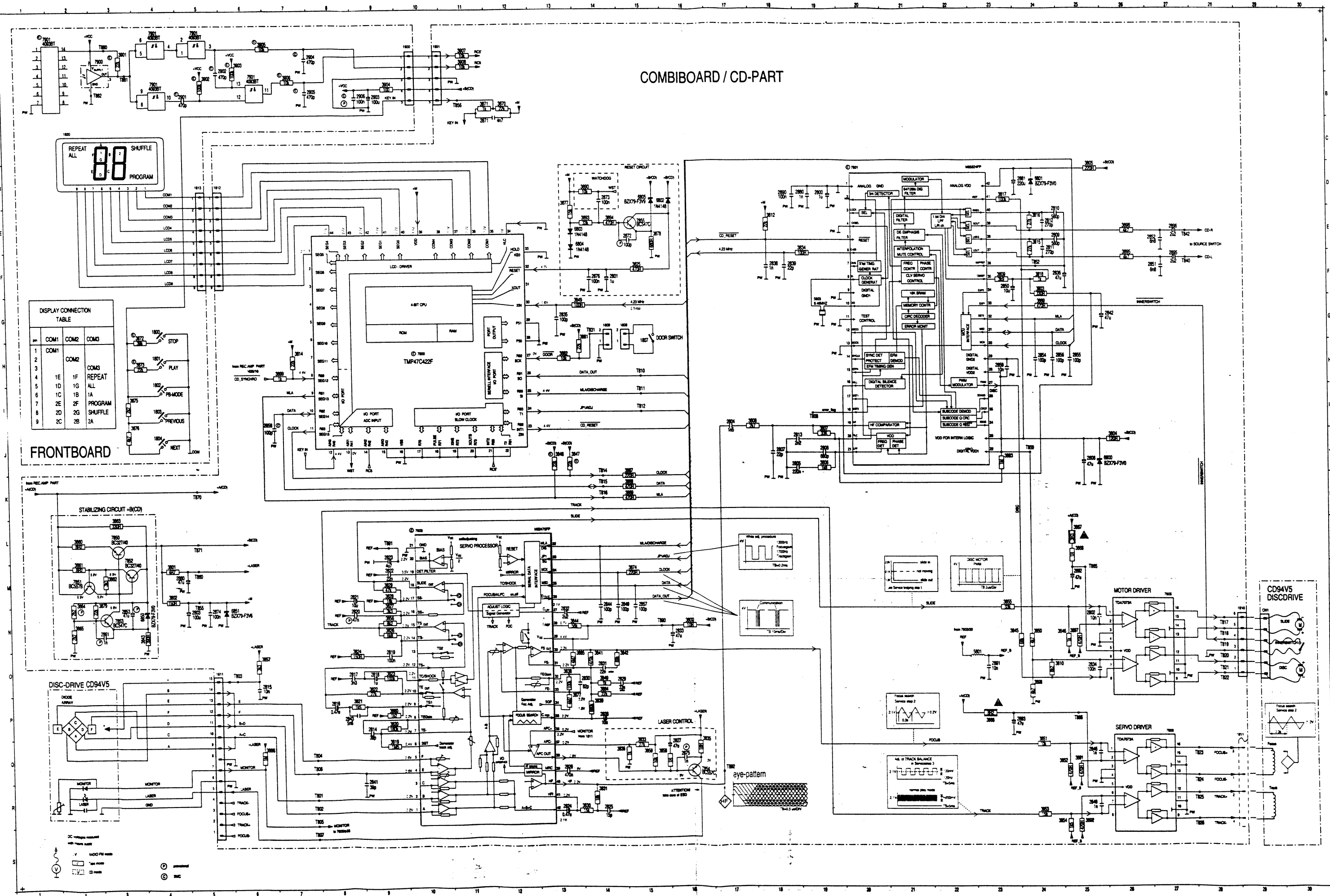




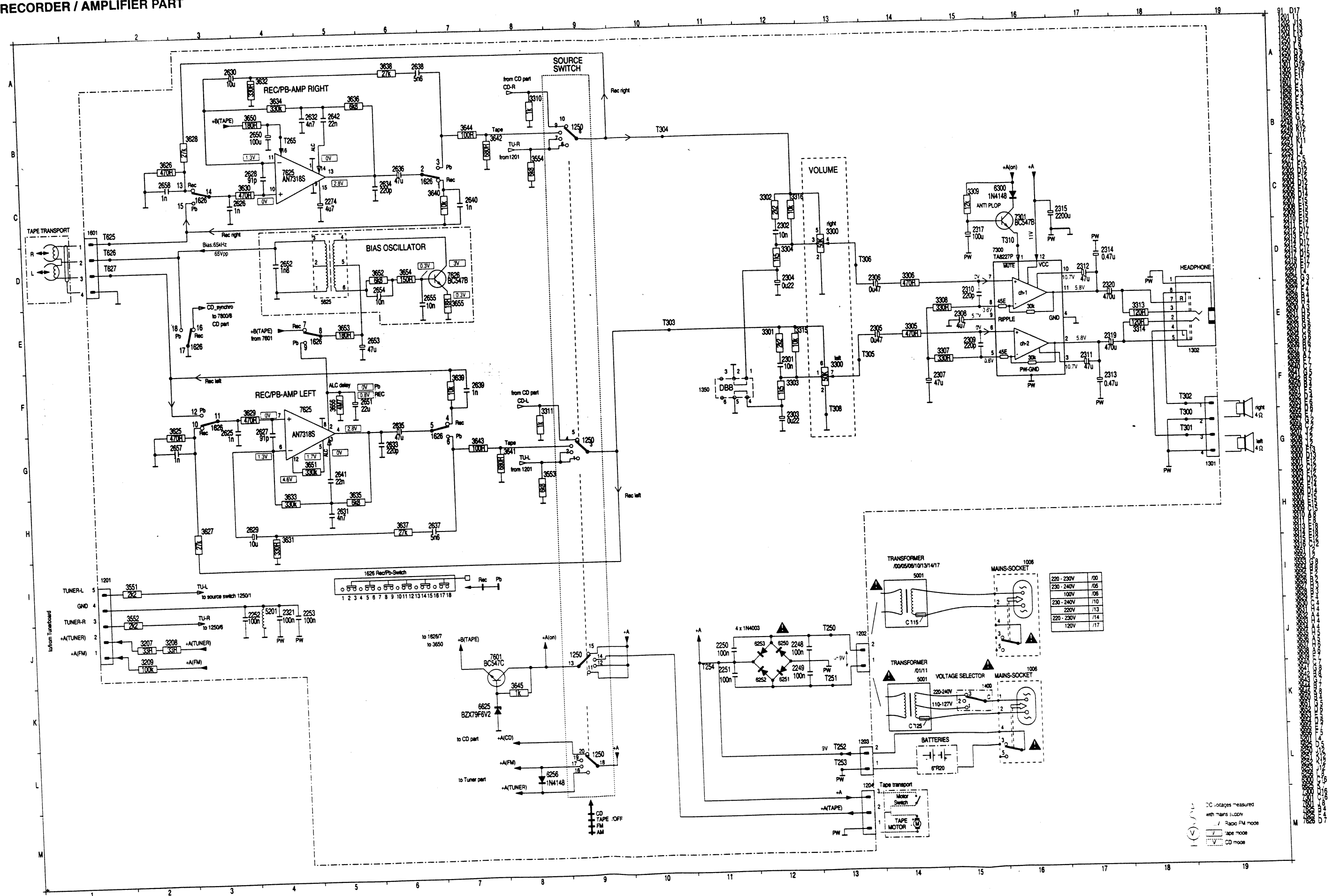
1201 B 1	2657 A 4	2881 D 3	3806 C 4	3878 B 2	9305 C 6
1202 C 6	2658 A 4	2890 B 3	3807 C 4	3879 A 3	9306 B 7
1203 C 5	2800 D 3	2891 E 4	3808 C 4	3880 E 3	9307 B 6
1204 C 5	2801 D 1	2892 D 4	3809 D 4	3881 C 1	9308 C 6
1250 D 7	2802 D 5	2893 E 4	3810 D 4	3882 D 1	9309 B 6
1301 C 6	2803 C 2	2895 B 5	3812 B 2	3883 C 4	9310 C 6
1302 E 5	2804 C 3	2896 B 6	3814 B 2	3884 E 1	9311 D 5
1350 C 7	2805 C 5	2901 A 7	3815 D 4	3885 D 1	9313 D 5
1601 A 5	2806 C 4	2903 A 7	3816 D 3	3886 D 3	9314 A 5
1626 A 4	2807 C 4	2906 A 7	3817 D 4	3887 C 3	9315 D 5
1800 A 6	2808 D 5	3207 A 2	3818 D 4	3888 C 3	9325 E 6
1801 A 6	2809 D 4	3208 A 2	3819 E 3	3889 C 3	9326 E 6
1809 E 1	2810 D 4	3209 A 2	3820 C 3	3890 B 2	9327 E 6
1810 E 1	2811 D 4	3300 B 7	3821 E 3	3891 C 3	9629 B 5
1811 D 3	2812 D 4	3301 B 7	3822 E 2	3892 E 4	9630 A 4
1812 A 1	2813 C 4	3302 B 7	3823 E 3	3893 B 2	9631 A 4
1901 C 2	2814 E 3	3303 B 7	3824 E 2	3894 A 2	9632 B 4
2248 C 5	2815 D 3	3304 B 7	3825 D 1	3895 D 4	9633 A 4
2249 C 6	2816 E 2	3305 E 7	3826 E 2	3896 E 4	9634 A 4
2250 C 5	2817 E 2	3306 E 7	3827 E 2	3897 E 4	9636 A 5
2251 D 6	2818 E 2	3307 E 7	3828 E 2	3898 E 5	9801 E 1
2252 A 1	2819 E 2	3308 E 7	3829 E 1	3899 B 1	9802 D 3
2253 A 1	2820 E 2	3309 D 6	3830 D 2	3901 A 7	9803 D 3
2274 B 4	2821 E 2	3310 C 6	3831 D 2	3907 C 2	9804 B 3
2301 B 7	2822 E 1	3311 C 7	3833 B 2	3908 C 2	9805 A 5
2302 B 7	2823 E 2	3313 E 5	3834 C 3	5201 A 2	9806 E 3
2303 C 7	2824 D 2	3314 E 5	3835 A 2	5625 B 6	9807 C 3
2304 C 7	2825 D 2	3315 B 7	3836 B 2	5801 E 3	9808 E 3
2305 C 7	2826 D 2	3316 B 6	3837 D 2	5803 C 4	9809 E 3
2306 D 7	2827 A 2	3551 A 2	3838 D 2	6250 C 5	9810 C 3
2307 D 7	2828 E 1	3552 A 2	3839 E 1	6251 C 5	9811 D 2
2308 D 7	2829 E 1	3553 A 2	3840 E 1	6252 D 6	9813 E 3
2309 E 7	2830 D 2	3554 A 2	3841 E 1	6253 C 5	9814 C 3
2310 E 7	2831 D 1	3625 A 5	3842 D 1	6256 A 3	9815 D 1
2311 E 6	2832 D 2	3626 A 5	3843 A 3	6300 D 6	9816 D 1
2312 E 6	2833 D 1	3627 A 5	3844 D 1	6625 C 6	9817 E 4
2313 E 6	2834 D 5	3628 A 5	3845 D 4	6800 B 3	9818 C 3
2314 D 7	2835 D 1	3629 B 5	3846 D 4	6801 D 3	9819 C 2
2315 D 6	2836 E 4	3630 B 5	3847 C 2	6802 B 1	9820 B 3
2317 D 6	2838 C 3	3631 A 5	3848 C 2	6803 B 2	9821 C 1
2319 E 6	2839 C 3	3632 B 5	3849 D 1	6804 B 2	9822 B 1
2320 E 5	2841 D 3	3633 A 4	3850 D 4	6805 B 2	9823 B 2
2321 B 1	2842 C 4	3634 A 4	3851 C 3	6850 A 3	9825 C 3
2625 B 5	2843 E 3	3635 A 4	3852 C 3	6851 C 1	9826 D 3
2626 B 5	2844 D 1	3636 B 4	3853 E 4	7300 E 7	9828 A 1
2627 B 4	2846 E 3	3637 A 4	3854 E 4	7301 D 6	9829 E 1
2628 B 4	2848 E 4	3638 B 5	3855 E 4	7601 C 6	9830 C 5
2629 A 4	2849 D 2	3639 A 4	3856 E 2	7625 B 4	9844 C 5
2630 B 5	2850 D 4	3640 A 4	3857 D 3	7626 B 6	9849 E 4
2631 A 4	2851 B 5	3641 C 7	3858 A 2	7800 C 1	9850 C 5
2632 B 4	2852 B 5	3642 C 7	3859 A 2	7801 D 4	9851 B 3
2633 B 4	2853 A 3	3643 A 4	3860 B 3	7803 D 2	9900 C 2
2634 B 4	2854 D 3	3644 B 4	3861 B 3	7805 D 5	
2635 A 4	2855 C 3	3645 C 6	3862 B 3	7806 E 4	
2636 B 4	2856 D 3	3650 B 4	3863 B 3	7850 B 3	
2637 A 4	2857 D 2	3651 B 5	3864 A 3	7851 B 3	
2638 B 4	2858 C 2	3652 B 6	3865 A 3	7852 A 2	
2639 A 4	2859 D 4	3653 B 5	3866 E 4	7853 B 3	
2640 A 3	2860 A 3	3654 B 6	3867 E 5	7854 A 2	
2641 A 4	2861 B 3	3655 B 6	3868 E 5	7855 A 2	
2642 B 4	2871 B 2	3656 B 4	3869 E 4	7900 A 7	
2650 B 4	2872 A 2	3800 D 1	3870 B 2	7901 A 7	
2651 B 4	2873 B 2	3801 A 2	3871 B 2	9300 D 7	
2652 B 6	2874 C 1	3802 B 2	3872 A 6	9301 C 7	
2653 B 6	2875 A 2	3803 C 4	3873 A 6	9302 D 8	
2654 B 6	2876 C 1	3804 B 3	3874 C 3	9303 E 6	
2655 B 6	2880 D 3	3805 B 3	3877 B 2	9304 D 7	

This image shows the internal circuit board of a Commodore 64. Key components visible include the 6502 microprocessor, the 6565 video chip, and the 6581 audio chip. The board is populated with numerous other integrated circuits, capacitors, and resistors, all interconnected by a complex network of traces. The board is housed in a metal case, with various connectors and ports visible on the edges.

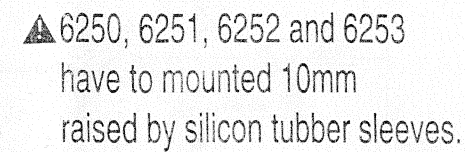




### RECORDER / AMPLIFIER PART

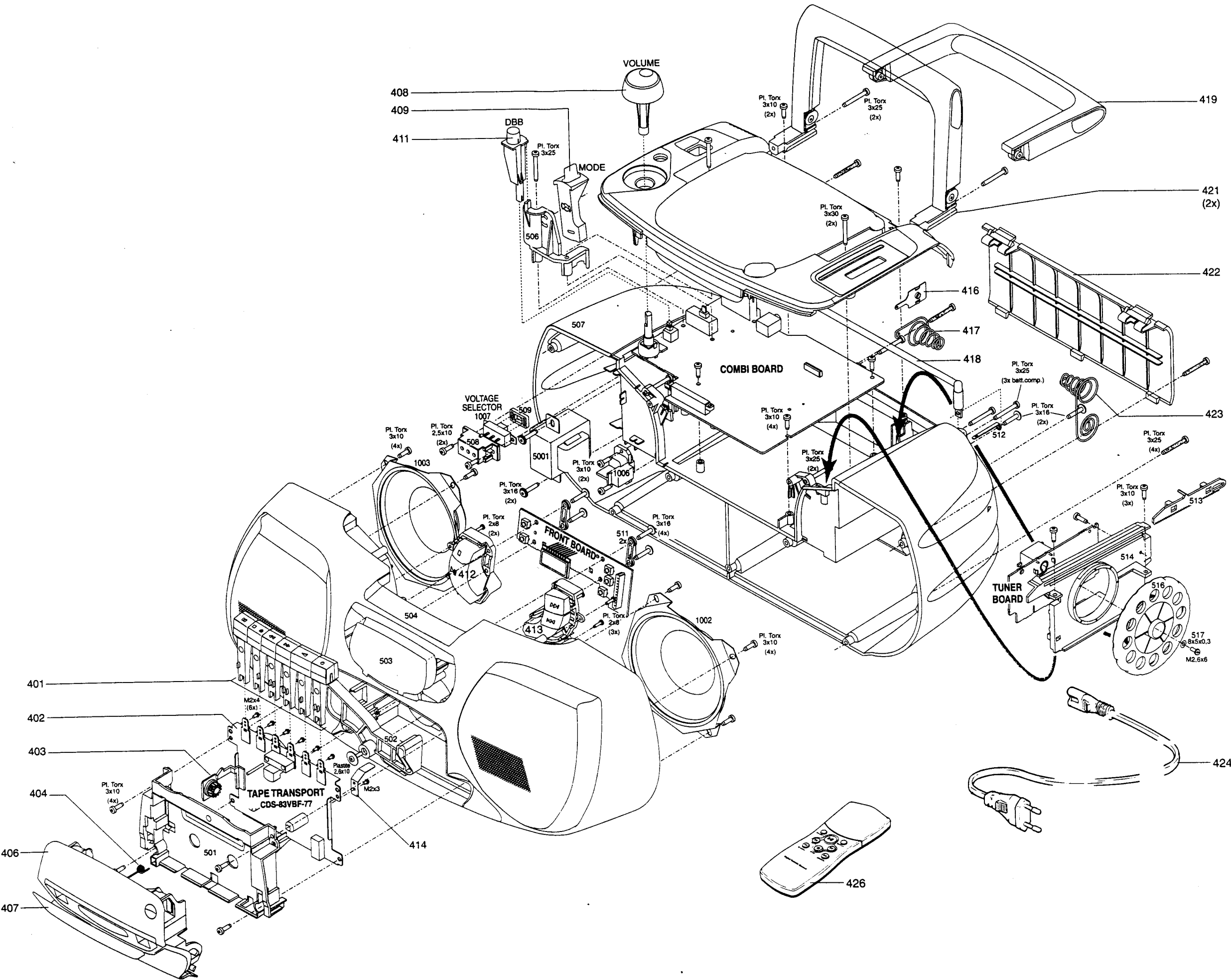






1201 B 1	2657 A 4	2881 D 3	3806 C 4	3878 B 2	9305 C 6
1202 C 6	2658 A 4	2890 B 3	3807 C 4	3879 A 3	9306 B 7
1203 C 5	2800 D 3	2891 E 4	3808 C 4	3880 E 3	9307 B 6
1204 C 5	2801 D 1	2892 D 4	3809 D 4	3881 C 1	9308 C 6
1250 D 7	2802 D 5	2893 E 4	3810 D 4	3882 D 1	9309 B 6
1301 C 6	2803 C 2	2895 B 5	3812 B 2	3883 C 4	9310 C 6
1302 E 5	2804 C 3	2896 B 6	3814 B 2	3884 E 1	9311 D 5
1350 C 7	2805 C 5	2901 A 7	3815 D 4	3885 D 1	9313 D 5
1601 A 5	2806 C 4	2903 A 7	3816 D 3	3886 D 3	9314 A 5
1626 A 4	2807 C 4	2906 A 7	3817 D 4	3887 C 3	9315 D 5
1800 A 6	2808 D 5	3207 A 2	3818 D 4	3888 C 3	9325 E 6
1801 A 6	2809 D 4	3208 A 2	3819 E 3	3889 C 3	9326 E 6
1809 E 1	2810 D 4	3209 A 2	3820 E 3	3890 B 2	9327 E 6
1810 E 1	2811 D 4	3300 B 7	3821 E 3	3891 E 3	9629 B 5
1811 D 3	2812 D 4	3301 B 7	3822 E 2	3892 E 4	9630 A 4
1812 A 1	2813 C 4	3302 B 7	3823 E 3	3893 B 2	9631 A 4
1901 C 2	2814 E 3	3303 B 7	3824 E 2	3894 A 2	9632 B 4
2248 C 5	2815 D 3	3304 B 7	3825 D 1	3895 D 4	9633 A 5
2249 C 6	2816 E 2	3305 E 7	3826 E 2	3896 E 4	9634 A 4
2250 C 5	2817 E 2	3306 E 7	3827 E 2	3897 E 4	9636 A 5
2251 D 6	2818 E 2	3307 E 7	3828 E 2	3898 E 5	9801 E 1
2252 A 1	2819 E 2	3308 E 7	3829 E 1	3899 B 1	9802 D 3
2253 A 1	2820 E 2	3309 D 6	3830 D 2	3901 A 7	9803 D 3
2274 B 4	2821 E 2	3310 C 6	3831 D 2	3907 C 2	9804 B 3
2301 B 7	2822 E 1	3311 C 7	3833 B 2	3908 C 2	9805 A 5
2302 B 7	2823 E 2	3313 E 5	3834 C 3	5201 A 2	9806 E 3
2303 C 7	2824 D 2	3314 E 5	3835 A 2	5625 B 6	9807 C 3
2304 C 7	2825 D 2	3315 B 7	3836 B 2	5801 E 3	9808 E 3
2305 C 7	2826 D 2	3316 B 6	3837 D 2	5803 C 4	9809 E 3
2306 D 7	2827 A 2	3551 A 2	3838 D 2	6250 C 5	9810 E 3
2307 D 7	2828 E 1	3552 A 2	3839 E 1	6251 C 5	9811 D 2
2308 D 7	2829 E 1	3553 A 2	3840 E 1	6252 D 6	9813 E 3
2309 E 7	2830 D 2	3554 A 2	3841 E 1	6253 C 5	9814 C 3
2310 E 7	2831 D 1	3625 A 5	3842 D 1	6256 C 3	9815 D 1
2311 E 6	2832 D 2	3626 A 5	3843 A 3	6300 D 6	9816 D 1
2312 E 6	2833 D 1	3627 A 5	3844 D 1	6625 C 6	9817 E 4
2313 E 6	2834 D 5	3628 A 5	3845 D 4	6800 B 3	9818 C 3
2314 D 7	2835 D 1	3629 B 5	3846 D 4	6801 D 3	9819 C 2
2315 D 6	2836 E 4	3630 B 5	3847 C 2	6802 B 1	9820 B 3
2317 D 6	2838 C 3	3631 A 5	3848 C 2	6803 B 2	9821 C 1
2319 E 6	2839 C 3	3632 B 5	3849 D 1	6804 B 2	9822 B 1
2320 E 5	2841 D 3	3633 A 4	3850 D 4	6805 B 2	9823 B 2
2321 B 1	2842 C 4	3634 B 4	3851 E 3	6850 A 3	9825 C 3
2625 B 5	2843 E 3	3635 A 4	3852 E 3	6851 C 1	9826 D 3
2626 B 5	2844 D 1	3636 B 4	3853 E 4	7300 E 7	9828 A 1
2627 B 4	2846 E 3	3637 A 4	3854 E 4	7301 D 6	9829 E 1
2628 B 4	2848 E 4	3638 B 5	3855 E 4	7601 C 6	9830 C 5
2629 A 4	2849 D 2	3639 A 4	3856 E 2	7625 B 4	9844 C 5
2630 B 5	2850 D 4	3640 A 3	3857 D 3	7626 B 6	9849 E 4
2631 A 4	2851 B 5	3641 C 7	3858 A 2	7800 C 1	9850 C 5
2632 B 4	2852 B 5	3642 C 7	3859 A 2	7801 D 4	9851 B 3
2633 B 4	2853 A 3	3643 A 4	3860 B 3	7803 D 2	9900 C 2
2634 B 4	2854 D 3	3644 B 4	3861 B 3	7805 D 5	
2635 A 4	2855 C 3	3645 C 6	3862 B 3	7806 E 4	
2636 B 4	2856 D 3	3650 B 4	3863 B 3	7850 B 3	
2637 A 4	2857 D 2	3651 B 5	3864 A 3	7851 B 3	
2638 B 4	2858 C 2	3652 B 6	3865 A 3	7852 A 2	
2639 A 4	2859 D 4	3653 B 5	3866 E 4	7853 B 3	
2640 A 3	2860 A 3	3654 B 6	3867 E 5	7854 A 2	
2641 A 4	2861 B 3	3655 B 6	3868 E 5	7855 A 2	
2642 B 4	2871 B 2	3656 B 4	3869 E 4	7900 A 7	
2650 B 4	2872 A 2	3800 D 1	3870 B 2	7901 A 7	
2651 B 4	2873 B 2	3801 A 2	3871 B 2	9300 D 7	
2652 B 6	2874 C 1	3802 B 2	3872 A 6	9301 C 7	
2653 B 6	2875 A 2	3803 C 4	3873 A 6	9302 D 6	
2654 B 6	2876 C 1	3804 B 3	3874 C 3	9303 E 6	
2655 B 6	2880 D 3	3805 B 3	3877 B 2	9304 D 7	

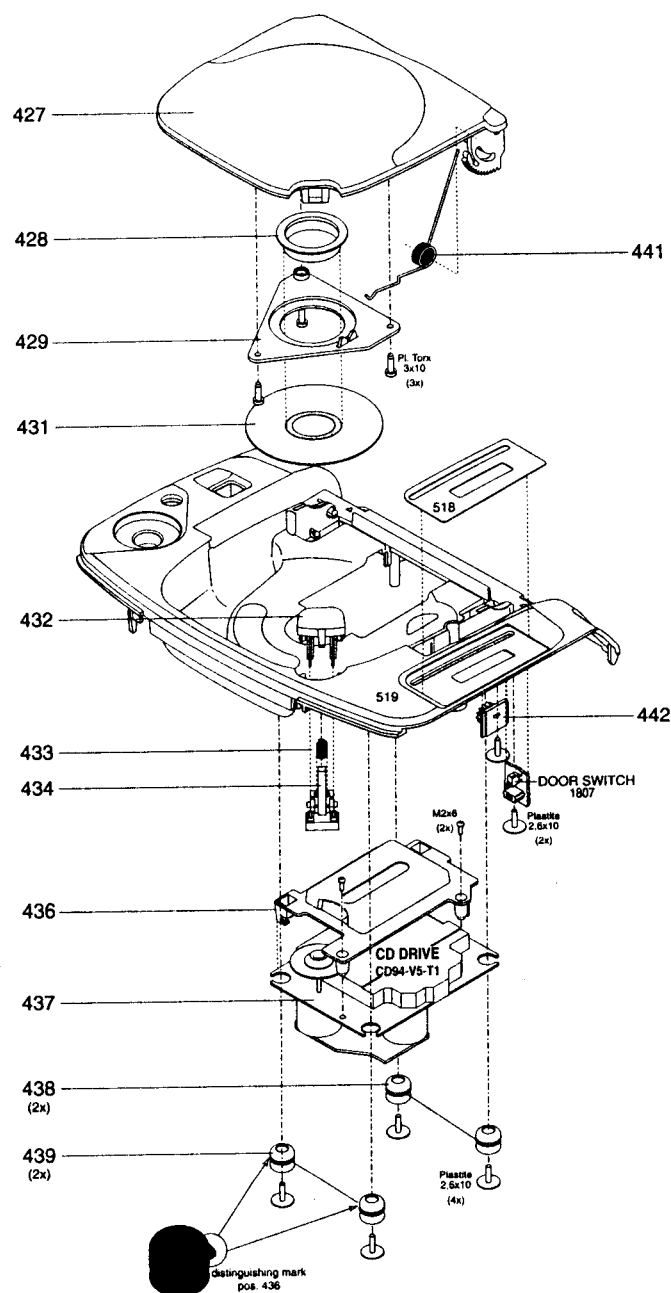
EXPLODED VIEW DIAGRAM - CABINET





## EXPLODED VIEW DIAGRAM - CD

8-2



## MECHANICAL PARTSLIST

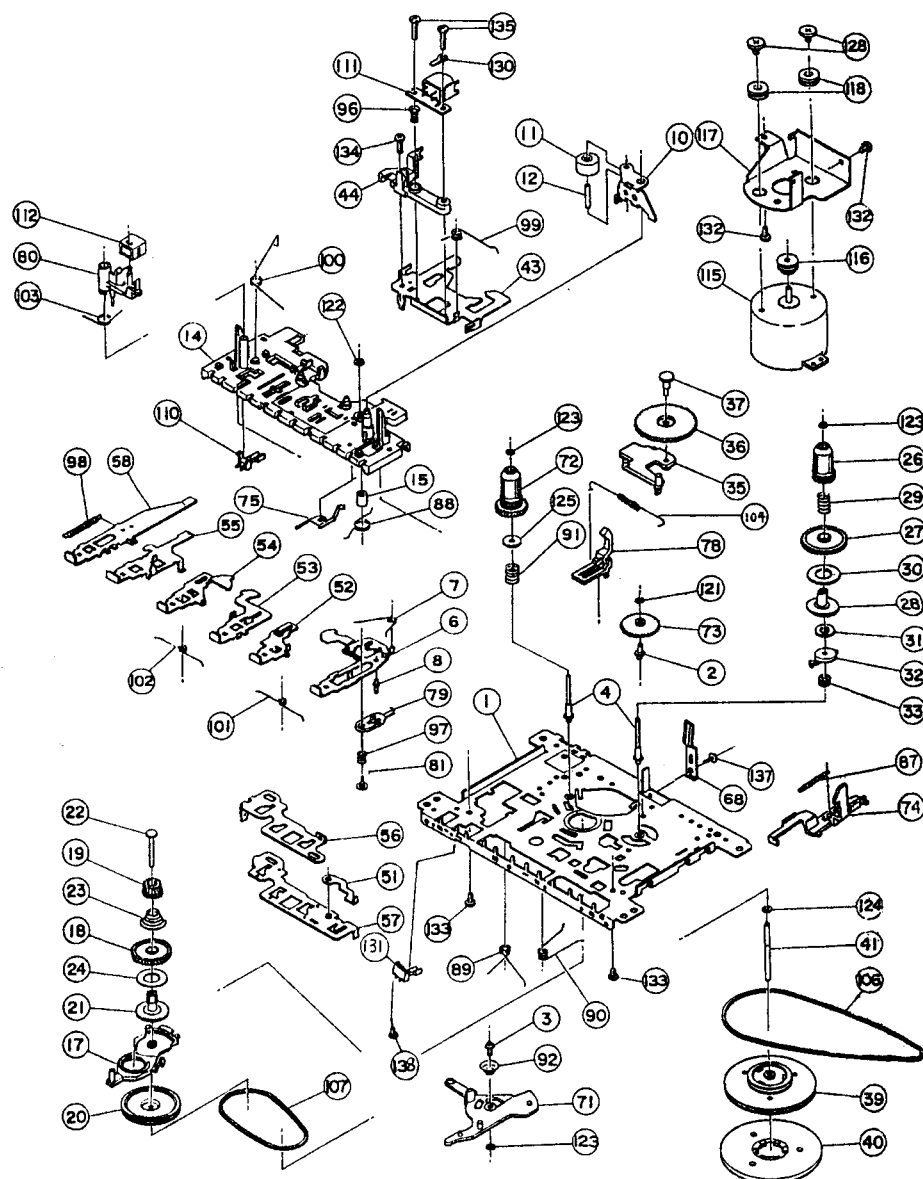
401	4822 410 12273	Key Set Cassette
402	4822 691 10612	Shinwa CDS-83VBF-77
403	4822 529 10322	Damper Assy
404	4822 492 42709	Spring Door
406	4822 443 11152	Door Cassette
407	4822 381 12032	Lens Cassette
408	4822 410 11404	Knob Volume
409	4822 410 11406	Knob Mode
411	4822 410 11405	Knob DBB
412	4822 410 12269	Button Set CD1
413	4822 410 12271	Button Set CD2
414	4822 492 11061	Spring Recording
416	4822 290 80313	Contact Plate
417	4822 492 51961	Spring Compression
418	4822 303 14038	Telescopic Aerial
419	4822 498 10726	Handle
421	4822 402 11273	Bracket Handle
422	4822 442 01662	Door Battery
423	4822 492 51733	Spring Compression
424	4822 321 10249	Mains Cord (Not for -/17)
424	4822 321 11466	Mains Cord (For -/17)
426	4822 219 10665	Remote RC330801/01
426	4822 219 10664	Remote RC330801/04
427	4822 443 10819	Door CD
428	4822 532 12798	Ring Pressure
429	4822 402 61508	Bracket CD
431	4822 535 60096	Disc
432	4822 410 11507	Knob Eject CD
433	4822 492 11058	Spring Eject
434	4822 402 10723	Lever Eject
436	4822 442 01096	Cover CD
437	4822 691 10654	CD Drive CD94V5T1
438	4822 529 10386	Damper Rubber (30 DEG)
439	4822 529 10387	Damper Rubber (40 DEG)
441	4822 492 11718	Spring CD
442	4822 529 10322	Damper Assy
	4822 256 90463	Holder Ferrite Bar
	4822 736 16714	Instruction manual (For -/00)
	4822 736 16708	Instruction manual (For -/01)
	4822 736 16707	Instruction manual (For -/14)
	4822 736 16712	Instruction manual (For -/17)

Note : Only those part mentioned in the list are normal service parts.

PCS 99 163

## EXPLODED VIEW DIAGRAM - TAPE DECK

8-3



## ELECTRICAL PARTSLIST

-II-

2101	4822 122 33195	100pF 10% 50V
2102	4822 122 33848	47pF 5%SL 50V
2103	4822 124 41579	10μF 20% 50V
2104	4822 124 41579	10μF 20% 50V
2105	4822 122 33191	22pF 5% 50V
2106	4822 125 50681	Variable Cap
2108	4822 122 10465	4.7pF 10% 50V
2109	4822 126 14482	27pF 5% 50V N470
2110	4822 126 12229	8.2pF N750 50V
2112	4822 124 40433	47μF 20% 25V
2113	4822 126 13581	0.22μF 20% 50V
2114	4822 126 12787	330pF 10% Y5V 50V
2115	4822 124 40246	4.7μF 20% 63V
2116	4822 121 70619	22nF 10% 50V
2116	4822 121 43145	33nF 10% 50V
2117	4822 124 40242	1μF 20% 63V
2118	4822 124 40242	1μF 20% 63V
2119	4822 121 70619	22nF 10% 50V
2119	4822 121 43145	33nF 10% 50V
2120	4822 124 40242	1μF 20% 63V
2121	4822 124 41407	0.47μF 20% 63V
2122	4822 124 41407	0.47μF 20% 63V
2248	5322 121 42386	100nF 5% 63V
2249	5322 121 42386	100nF 5% 63V
2250	5322 121 42386	100nF 5% 63V
2251	5322 121 42386	100nF 5% 63V
2252	4822 126 12882	100nF +80-20% 50V
2253	4822 126 12882	100nF +80-20% 50V
2274	4822 124 40246	4.7μF 20% 63V
2301	4822 121 51387	10nF 20% 16V
2302	4822 121 51387	10nF 20% 16V
2303	4822 126 13581	0.22μF 20% 50V
2304	4822 126 13581	0.22μF 20% 50V
2305	4822 124 41407	0.47μF 20% 63V
2306	4822 124 41407	0.47μF 20% 63V
2307	4822 124 40433	47μF 20% 25V
2308	4822 124 40246	4.7μF 20% 63V
2309	4822 122 10466	220pF 10% 50V
2310	4822 122 10466	220pF 10% 50V
2311	4822 124 40433	47μF 20% 25V

-II-

2312	4822 124 40433	47μF 20% 25V
2313	4822 124 41407	0.47μF 20% 63V
2314	4822 124 41407	0.47μF 20% 63V
2315	4822 123 14025	2200μF 20% 16V
2317	4822 124 81029	100μF 20% 25V
2319	4822 124 80195	470μF 20% 10V
2320	4822 124 80195	470μF 20% 10V
2321	4822 126 12882	100nF +80-20% 50V
2625	4822 122 33197	1nF 10% 50V
2626	4822 122 33197	1nF 10% 50V
2627	4822 126 13507	91pF 5% 50V
2628	4822 126 13507	91pF 5% 50V
2629	4822 124 41579	10μF 20% 50V
2630	4822 124 41579	10μF 20% 50V
2631	4822 121 10686	4.7nF 10% 50V
2632	4822 121 10686	4.7nF 10% 50V
2633	4822 122 10466	220pF 10% 50V
2634	4822 122 10466	220pF 10% 50V
2635	4822 124 40433	47μF 20% 25V
2636	4822 124 40433	47μF 20% 25V
2637	4822 121 42469	5.6nF 5% 250V
2638	4822 121 42469	5.6nF 5% 250V
2639	4822 122 33197	1nF 10% 50V
2640	4822 122 33197	1nF 10% 50V
2641	4822 126 11585	22nF +80-20% Y5V 25V
2642	4822 126 11585	22nF +80-20% Y5V 25V
2650	4822 124 41584	100μF 20% 10V
2651	4822 124 81151	22μF 50V
2652	4822 121 10685	1.8nF 10% 50V
2653	4822 124 40433	47μF 20% 25V
2654	4822 121 51387	10nF 20% 16V
2655	4822 121 51387	10nF 20% 16V
2657	4822 122 33197	1nF 10% 50V
2658	4822 122 33197	1nF 10% 50V
2800	4822 124 40242	1μF 20% 63V
2801	4822 124 40242	1μF 20% 63V
2802	4822 121 51387	10nF 20% 16V
2803	4822 124 23432	100μF 20% 10V
2804	4822 126 12878	1.5nF 10% 16V
2805	4822 121 42408	220nF 5% 63V

## ELECTRICAL PARTSLIST

-II-

2806	4822 126 14316	680pF 10% 50V Y5P
2807	4822 122 33191	22pF 5% 50V
2808	4822 124 40433	47μF 20% 25V
2809	4822 122 10459	560pF 10% 50V
2810	4822 122 10459	560pF 10% 50V
2811	4822 126 12702	270pF 10% Y5P 50V
2812	4822 126 12702	270pF 10% Y5P 50V
2813	4822 126 12339	2.2nF 10% Y5R
2814	4822 126 13677	39pF 5% 50V
2815	4822 121 51387	10nF 20% 16V
2816	4822 124 41407	0.47μF 20% 63V
2817	4822 122 10577	3.3nF 10% 16V
2818	4822 124 40242	1μF 20% 63V
2819	5322 121 42386	100nF 5% 63V
2821	4822 124 41579	10μF 20% 50V
2822	4822 126 11585	22nF +80-20% Y5V 25V
2823	4822 124 40246	4.7μF 20% 63V
2824	4822 124 41407	0.47μF 20% 63V
2825	4822 122 10462	15pF 5% NPO
2826	4822 121 51252	470nF 5% 63V
2827	4822 124 40433	47μF 20% 25V
2828	4822 124 41579	10μF 20% 50V
2829	4822 121 43145	33nF 10% 50V
2830	4822 122 10319	82pF 5% 50V
2831	4822 121 70619	22nF 10% 50V
2832	4822 124 41576	2.2μF 20% 50V
2833	4822 124 40433	47μF 20% 25V
2834	4822 126 12882	100nF +80-20% 50V
2835	4822 122 33195	100pF 10% 50V
2836	4822 124 40433	47μF 20% 25V
2838	4822 122 33197	1nF 10% 50V
2839	4822 122 33191	22pF 5% 50V
2841	4822 126 13677	39pF 5% 50V
2842	4822 124 40433	47μF 20% 25V
2843	4822 126 13098	5.6nF 20% 16V
2844	4822 122 33195	100pF 10% 50V
2846	4822 122 33197	1nF 10% 50V
2848	4822 122 33197	1nF 10% 50V
2849	4822 122 33195	100pF 10% 50V
2850	4822 124 41579	10μF 20% 50V

-II-


2851	4822 126 13312	6.8nF 20% Y5R 16V
2852	4822 126 13312	6.8nF 20% Y5R 16V
2854	4822 122 33195	100pF 10% 50V
2855	4822 122 33195	100pF 10% 50V
2856	4822 122 33195	100pF 10% 50V
2857	4822 122 33195	100pF 10% 50V
2858	5322 122 32531	100Pp 5%NPO 50V
2859	4822 121 51387	10nF 20% 16V
2860	4822 124 40433	47μF 20% 25V
2871	4822 126 11714	4.7nF 20%
2873	4822 126 12882	100nF +80-20% 50V
2874	4822 126 12882	100nF +80-20% 50V
2876	4822 126 12882	100nF +80-20% 50V
2880	4822 122 33197	1nF 10% 50V
2881	4822 124 11912	220μF 20% 6.3V
2890	4822 126 12882	100nF +80-20% 50V
2891	4822 121 51387	10nF 20% 16V
2892	4822 124 40433	47μF 20% 25V
2893	4822 124 40433	47μF 20% 25V
2895	4822 124 41576	2.2μF 20% 50V
2896	4822 124 41576	2.2μF 20% 50V
2901	5322 122 32268	470pF 10% 50V
2902	5322 122 32268	470pF 10% 50V
2903	4822 124 23432	100μF 20% 10V
2904	5322 122 32268	470pF 10% 50V
2905	5322 122 32268	470pF 10% 50V




3101	4822 100 20167	50K 30% LIN 0.1W
3102	4822 116 52297	68K 5% 0.5W
3104	4822 116 52256	2K2 5% 0.5W
3106	4822 116 52231	820R 5% 0.5W
3107	4822 116 52191	33R 5% 0.5W
3113	4822 116 52234	100K 5% 0.5W
3114	4822 116 52234	100K 5% 0.5W
3207	4822 116 52191	33R 5% 0.5W
3208	4822 116 52191	33R 5% 0.5W
3209	4822 116 52234	100K 5% 0.5W





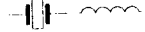
## ELECTRICAL PARTSLIST

				
3300	4822 101 11826	50K	20% LIN	0,025W
3301	4822 116 52256	2K2	5%	0,5W
3302	4822 116 52256	2K2	5%	0,5W
3303	4822 116 52243	1K5	5%	0,5W
3304	4822 116 52243	1K5	5%	0,5W
3305	4822 116 83883	470R	5%	0,5W
3306	4822 116 83883	470R	5%	0,5W
3307	4822 116 52219	330R	5%	0,5W
3308	4822 116 52219	330R	5%	0,5W
3309	4822 116 52238	12K	5%	0,5W
3310	4822 050 11002	1K	1%	0,4W
3311	4822 050 11002	1K	1%	0,4W
3313	4822 116 52206	120R	5%	0,5W
3314	4822 116 52206	120R	5%	0,5W
3315	4822 116 83864	10K	5%	0,5W
3316	4822 116 83864	10K	5%	0,5W
3551	4822 116 52256	2K2	5%	0,5W
3552	4822 116 52256	2K2	5%	0,5W
3553	4822 116 83961	6K8	5%	
3554	4822 116 83961	6K8	5%	
3625	4822 116 83883	470R	5%	0,5W
3626	4822 116 83883	470R	5%	0,5W
3627	4822 116 52264	27K	5%	0,5W
3628	4822 116 52264	27K	5%	0,5W
3629	4822 116 83883	470R	5%	0,5W
3630	4822 116 83883	470R	5%	0,5W
3631	4822 116 52219	330R	5%	0,5W
3632	4822 116 52219	330R	5%	0,5W
3633	4822 116 52272	330K	5%	0,5W
3634	4822 116 52272	330K	5%	0,5W
3635	4822 116 83961	6K8	5%	
3636	4822 116 83961	6K8	5%	
3637	4822 116 52264	27K	5%	0,5W
3638	4822 116 52264	27K	5%	0,5W
3639	4822 116 83864	10K	5%	0,5W
3640	4822 116 83864	10K	5%	0,5W
3641	4822 116 52228	680R	5%	0,5W
3642	4822 116 52228	680R	5%	0,5W
3643	4822 116 52175	100R	5%	0,5W
3644	4822 116 52175	100R	5%	0,5W



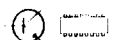
				
3645	4822 050 11002	1K	1%	0,4W
3650	4822 116 52213	180R	5%	0,5W
3651	4822 116 52272	330K	5%	0,5W
3652	4822 116 83961	6K8	5%	
3653	4822 116 52213	180R	5%	0,5W
3654	4822 116 83868	150R	5%	0,5W
3655	4822 116 52184	18R	5%	0,5W
3656	4822 111 30893	4M7	5%	0,2W
3800	4822 116 52176	10R	5%	0,5W
3801	4822 050 24708	4R7	1%	0,6W
3802	4822 116 83868	150R	5%	0,5W
3803	4822 116 52219	330R	5%	0,5W
3804	4822 116 52206	120R	5%	0,5W
3805	4822 116 83872	220R	5%	0,5W
3806	4822 116 52249	1K8	5%	0,5W
3807	4822 116 52271	33K	5%	0,5W
3808	4822 116 52263	2K7	5%	0,5W
3809	4822 116 52276	3K9	5%	0,5W
3810	4822 116 52303	8K2	5%	0,5W
3812	4822 116 52257	22K	5%	0,5W
3814	4822 116 52257	22K	5%	0,5W
3815	4822 116 52284	27K	5%	0,5W
3816	4822 116 52264	27K	5%	0,5W
3817	4822 116 52234	100K	5%	0,5W
3818	4822 050 11002	1K	1%	0,4W
3819	4822 117 11825	1M5	5%	
3820	4822 116 52252	180K	5%	0,5W
3821	4822 116 52243	1K5	5%	0,5W
3822	4822 116 52264	27K	5%	0,5W
3823	4822 116 52234	100K	5%	0,5W
3824	4822 116 83868	150R	5%	0,5W
3825	4822 116 83883	470R	5%	0,5W
3826	4822 116 83961	6K8	5%	
3827	4822 116 52269	3K3	5%	0,5W
3828	4822 116 52251	18K	5%	0,5W
3829	4822 116 83884	47K	5%	0,5W
3830	4822 116 52244	15K	5%	0,5W
3831	4822 116 52251	18K	5%	0,5W
3833	4822 116 52264	27K	5%	0,5W
3834	4822 116 52175	100R	5%	0,5W

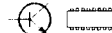




## ELECTRICAL PARTSLIST

				
3835	4822 116 52184	18R	5%	0,5W
3836	4822 050 11002	1K	1%	0,4W
3837	4822 111 30893	4M7	5%	0,2W
3838	4822 116 52234	100K	5%	0,5W
3839	4822 116 52298	680K	5%	0,5W
3840	4822 050 11002	1K	1%	0,4W
3841	4822 116 52285	470K	5%	0,5W
3842	4822 116 52297	68K	5%	0,5W
3843	4822 116 83881	390R	5%	0,5W
3844	4822 116 52291	56K	5%	0,5W
3845	4822 116 52297	68K	5%	0,5W
3846	4822 050 11002	1K	1%	0,4W
3847	4822 051 20223	22K	5%	0,1W
3848	4822 051 20223	22K	5%	0,1W
3849	4822 116 52175	100R	5%	0,5W
3850	4822 116 52283	4K7	5%	0,5W
3851	4822 116 83864	10K	5%	0,5W
3852	4822 116 83883	470R	5%	0,5W
3853	4822 116 52244	15K	5%	0,5W
3854	4822 116 52243	1K5	5%	0,5W
3855	4822 116 52271	33K	5%	0,5W
3856	4822 116 52303	8K2	5%	0,5W
3857	4822 116 52269	3K3	5%	0,5W
3858	4822 116 80176	1R	5%	0,5W
3859	4822 116 83864	10K	5%	0,5W
3860	4822 117 12798	8R2	5%	0,25W
3861	4822 117 12798	8R2	5%	0,25W
3862	4822 116 52269	3K3	5%	0,5W
3863	4822 116 52219	330R	5%	0,5W
3864	4822 116 52256	2K2	5%	0,5W
3865	4822 116 52256	2K2	5%	0,5W
3866	4822 052 10828	8R2	5%	0,33W
3867	4822 052 10338	3R3	5%	0,33W
3868	4822 116 80176	1R	5%	0,5W
3869	4822 116 83883	470R	5%	0,5W
3870	4822 116 52257	22K	5%	0,5W
3871	4822 050 11002	1K	1%	0,4W
3872	4822 051 20393	39K	5%	0,1W
3873	4822 051 20223	22K	5%	0,1W
3874	4822 116 83872	220R	5%	0,5W

				
3875	4822 116 52256	2K2	5%	0,5W
3876	4822 116 52283	4K7	5%	0,5W
3877	4822 116 52244	15K	5%	0,5W
3878	4822 116 52228	680R	5%	0,5W
3880	4822 116 52207	1K2	5%	0,5W
3881	4822 116 52257	22K	5%	0,5W
3882	4822 116 83864	10K	5%	0,5W
3883	4822 116 52235	1M	5%	0,5W
3884	4822 116 52264	27K	5%	0,5W
3885	4822 111 30893	4M7	5%	0,2W
3886	4822 116 52235	1M	5%	0,5W
3887	4822 116 83872	220R	5%	0,5W
3888	4822 116 83883	470R	5%	0,5W
3889	4822 116 83883	470R	5%	0,5W
3890	4822 116 83864	10K	5%	0,5W
3891	4822 116 83883	470R	5%	0,5W
3892	4822 116 83883	470R	5%	0,5W
3893	4822 116 52271	33K	5%	0,5W
3894	4822 116 83883	470R	5%	0,5W
3895	4822 116 52283	4K7	5%	0,5W
3896	4822 116 52283	4K7	5%	0,5W
3897	4822 116 83883	470R	5%	0,5W
3898	4822 116 52283	4K7	5%	0,5W
3899	4822 050 11002	1K	1%	0,4W
3901	4822 051 20223	22K	5%	0,1W
3902	4822 051 20104	100K	5%	0,1W
3903	4822 051 20104	100K	5%	0,1W
3904	4822 116 52175	100R	5%	0,5W
3905	4822 117 10833	10K	1%	0,1W
3906	4822 117 10833	10K	1%	0,1W
3907	4822 116 83864	10K	5%	0,5W
3908	4822 116 83864	10K	5%	0,5W
				
5101	4822 157 70513	Coil FM		
5102	4822 157 70731	Coil MW/ANT		
5104	4822 157 11843	Coil MD7B-01F		
5105	4822 157 71145	Coil 270µH		
5106	4822 157 70499	Coil IFT AM		

## ELECTRICAL PARTSLIST

		
5107	4822 242 81154	KMFC5058-Z
5108	4822 156 11146	Coil IFT AM
5201	4822 157 70826	Coil 2,4μH
5625	4822 157 10371	Coil Var 100kHz
5801	4822 157 70826	Coil 2,4μH
5803	4822 242 73557	Filter CST8,46MTW-TF01
		
6101	4822 130 30621	Diode 1N4148
6102	4822 130 30621	Diode 1N4148
6250	4822 130 31878	Diode 1N4003G
6251	4822 130 31878	Diode 1N4003G
6252	4822 130 31878	Diode 1N4003G
6253	4822 130 31878	Diode 1N4003G
6256	4822 130 30621	Diode 1N4148
6300	4822 130 30621	Diode 1N4148
6625	4822 130 34167	Diode BZX79-B6V2
6800	4822 130 31881	Diode BZX79-B3V0
6801	4822 130 31881	Diode BZX79-B3V0
6802	4822 130 30621	Diode 1N4148
6803	4822 130 30621	Diode 1N4148
6804	4822 130 30621	Diode 1N4148
6805	4822 130 31981	Diode BZX79-B3V9
6850	4822 130 31881	Diode BZX79-B3V0
6851	5322 130 34834	Diode BZX79-C3V6
		
7101	4822 209 32746	IC TEA5711T/N2
7102	4822 130 44503	Trans BC547C
7300	4822 209 31544	IC TA8227P
7301	4822 130 40959	Trans BC547B
7601	4822 130 44503	Trans BC547C
7625	4822 209 32918	IC AN7318S
7626	4822 130 40959	Trans BC547B
7800	4822 209 17363	IC TMP47C422F
7801	4822 209 16076	IC M65824FP/ES5.0
7803	4822 209 90496	IC M62475FP

		
7805	4822 209 32852	IC TDA7073A/N2
7806	4822 209 32852	IC TDA7073A/N2
7850	4822 130 41327	Trans BC327-40
7851	4822 130 44568	Trans BC557B
7852	4822 130 41327	Trans BC327-40
7853	4822 130 44503	Trans BC547C
7854	4822 130 42231	Trans BC557C
7855	4822 130 44503	Trans BC547C
7900	4822 130 10165	Receiver GP1U28XP
7901	5322 209 11147	IC HEF4093BT
<b>- MISCELLANEOUS -</b>		
1002	4822 240 10254	Loudspeaker
1003	4822 240 10254	Loudspeaker
1004	4822 691 10612	Shinwa CDS-83VBF-77
1005	4822 691 10654	CD Drive CD94V5T1
1006	4822 265 20318	Socket Main (Note for -/17)
1006	4822 265 20706	Socket Main (For -/17)
1007	 4822 277 21794	Voltage Selector (For -/01)
1102	4822 526 10176	Ferrite Bar 5x13x55mm
1250	4822 277 11739	Slide Switch
1302	4822 265 11317	Connector
1350	4822 276 12648	Push Switch
1626	4822 277 11504	Slide Switch
1800	4822 276 13114	Tact Switch
1801	4822 276 13114	Tact Switch
1802	4822 276 13114	Tact Switch
1803	4822 276 13114	Tact Switch
1804	4822 276 13114	Tact Switch
1807	4822 276 12889	Door Switch
1820	4822 135 00151	LCD Display
5001	 4822 146 11118	Transformer (For -/00/14)
5001	 4822 146 10877	Transformer (For -/01)
5001	 4822 146 10876	Transformer (For -/17)
8003	4822 320 12637	Flexible Foil Connection

Note : Only those parts mentioned in the list are normal service parts.